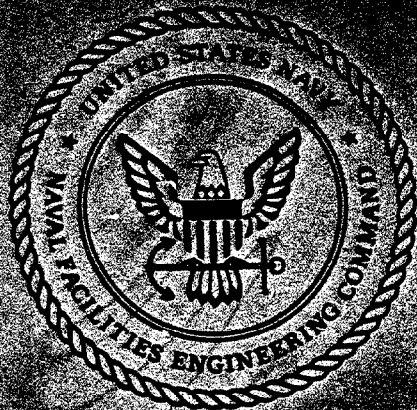


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NAS KEY WEST
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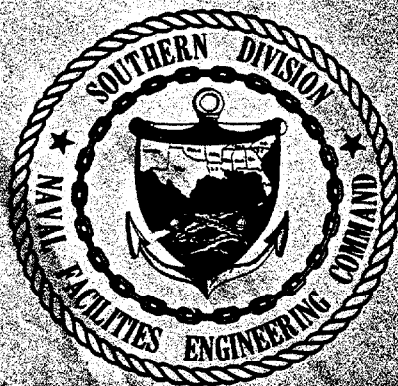
FINAL REMEDIAL INVESTIGATION REPORT PHASE 1 FOR SITE 1, SITE 3, SITE 4, SITE 5,
SITE 7, SITE 8, SITE 9 AND SITE 10 APPENDIX E NAS KEY WEST FL
5/1/1991
IT CORPORATION



FINAL REPORT

REMEDIAL INVESTIGATION - PHASE I FOR SITES 1, 3, 4, 5, 7, 8, 9, AND 10 APPENDIX E

**NAVAL AIR STATION - KEY WEST
KEY WEST, FLORIDA
CONTRACT NO. N62467-88-C-0196
MAY, 1991**



**Prepared by:
IT CORPORATION
8600 HIDDEN RIVER PARKWAY, SUITE 100
TAMPA, FLORIDA 33637**

**RELEASE OF THIS DOCUMENT REQUIRES PRIOR NOTIFICATION OF
THE COMMANDING OFFICER OF NAS - KEY WEST**

REMEDIAL INVESTIGATION/PHASE I REPORT
FOR SITES 1, 3, 4, 5, 7, 8, 9, AND 10
NAVAL AIR STATION - KEY WEST
KEY WEST, FLORIDA

APPENDIX E - VISUAL CLASSIFICATION OF SOILS
AND WELL INSTALLATION REPORT

PREPARED FOR

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA
CONTRACT NUMBER N62467-88-C-0196

PREPARED BY

IT CORPORATION
8600 HIDDEN RIVER PARKWAY
SUITE 100
TAMPA, FLORIDA 33637

IT PROJECT NUMBER 595392
MAY 1991

Site 1
Truman Annex Refuse Disposal Area

TA/5-91/595392\P1E-PGS.SB8

Well Construction D
 Truman Annex
 Refuse Disposal A/
 Site 1
 NAS Key West
 Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 1-1	06/06/90	11.57	8.57	15.5	12.5	5.57 TO -6.93	0.010	16.0	0.5	1.5
MW 1-2	06/06/90	9.31	6.31	15.5	12.5	3.31 TO -9.19	0.010	16.0	0.5	1.5
MW 1-3	06/06/90	10.61	7.61	14.0	10.0	3.61 to -6.39	0.010	12.5	0.5	1.5



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: KeyWest Remedial Investigation - Site #1		
BORING NUMBER: MW1-1	COORDINATES: N/A	DATE: 6/6/90	
ELEVATION: 11.57	GWL: Depth 7.1	Date/Time 6/6/90-1115	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: R. Dorsey	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Hollow Stem Auger / Soil Spoon			PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	N/A	N/A	Fill dirt + gravel dark brown		N/A	N/A	Time 1105 Organic Vapor (ppm) OVA
2-4				Fill dirt + gravel Light brown No dust				
4-6				Fill dirt + gravel Light brown No dust				
6-8		>50		Refusal, auger down to 10', - hit some sheet metal during augering				
8-10		↓		Refusal, auger down to 10'				
10-12		23 27 24 20		Limestone fill w/ shell fragments tan				
12-14		18 16 18 19		Limestone fill w/ shell fragments tan				
14-15	V	16 13	V	Limestone fill w/ shell fragments tan			V	O.C. 1105 OVA

NOTES:

Drilling Contractor Drilling Services
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin & Alex

Notes: Benzene was added and analyzed
 to hydrate

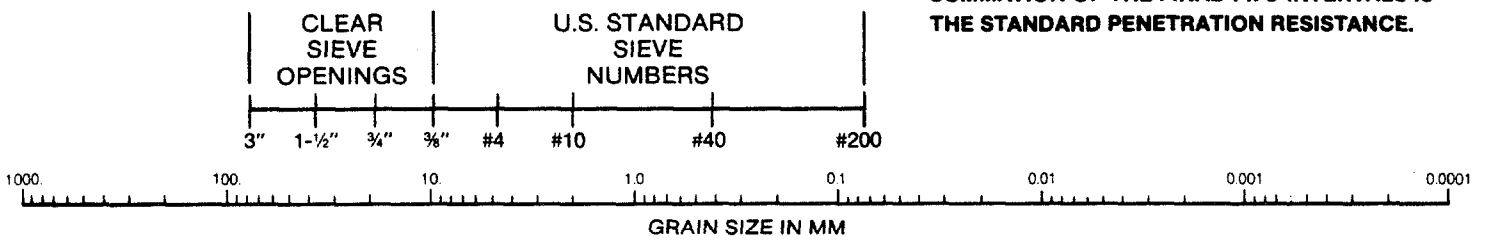
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation Site</u>	
BORING NUMBER: <u>mw1-1</u>		COORDINATES: <u>N/A</u>	
ELEVATION: <u>11.57</u>		DATE: <u>6/6/90</u>	
ENGINEER/GEOLOGIST: <u>R. Dorsey</u>		DATE STARTED: <u>6/6/90</u>	
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		DATE COMPLETED: <u>6/6/90</u>	
		PAGE <u>2</u> OF <u>2</u>	

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
15-16	N/A		N/A	Oolitic Limestone, white no fill	N/A	N/A	N/A	Time Organic Vapor (ppm)
16-18	✓ mw-1 6.0 10x	12 14 14 17		Oolitic Limestone white, no fill				0.0 ppm OVA
18-20		10 12 9 8	✓	Oolitic Limestone white, no fill	✓	✓	✓	11:45
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

NOTE: Bentonite pellets
 added and allowed
 to hydrate

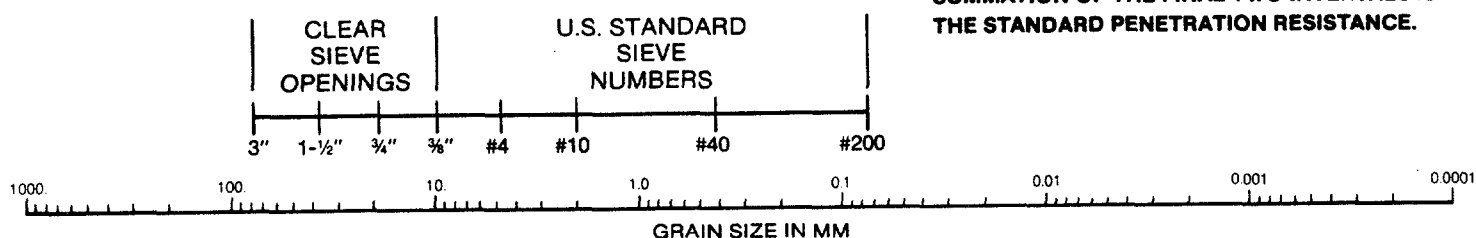
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/8/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW1-1 DATE OF INSTALLATION 6/6/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u>and D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>6'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "O"</u>
TOTAL PERFORATED AREA <u>12.5'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		11.57	
GROUND SURFACE	0.0		8.57	
BOTTOM OF PROTECTIVE PIPE	1.5		7.07	
BOREHOLE FILL MATERIALS:				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.5	TOP 8.57	BOTTOM 7.07
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 2.0	TOP 7.07	BOTTOM 6.57
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 18.0	TOP 6.57	BOTTOM -9.43
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 3.0	BOTTOM 15.0	TOP 5.57	BOTTOM -6.93
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	18.0		-9.43	
GWL AFTER INSTALLATION	7.1		1.4	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Bentonite hydrated for 1/2 hour or more before addition of grout. 2'X2'X6" thick concrete pad installed. Well developed 6/6/90 approximately 15 min. by centrifugal pump produced clear sand free water, approximately 25 gallons pumped. Measuring tape deconed before and after use.



INTERNATIONAL
TECHNOLOGY
CORPORATION

MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Key West Remedial

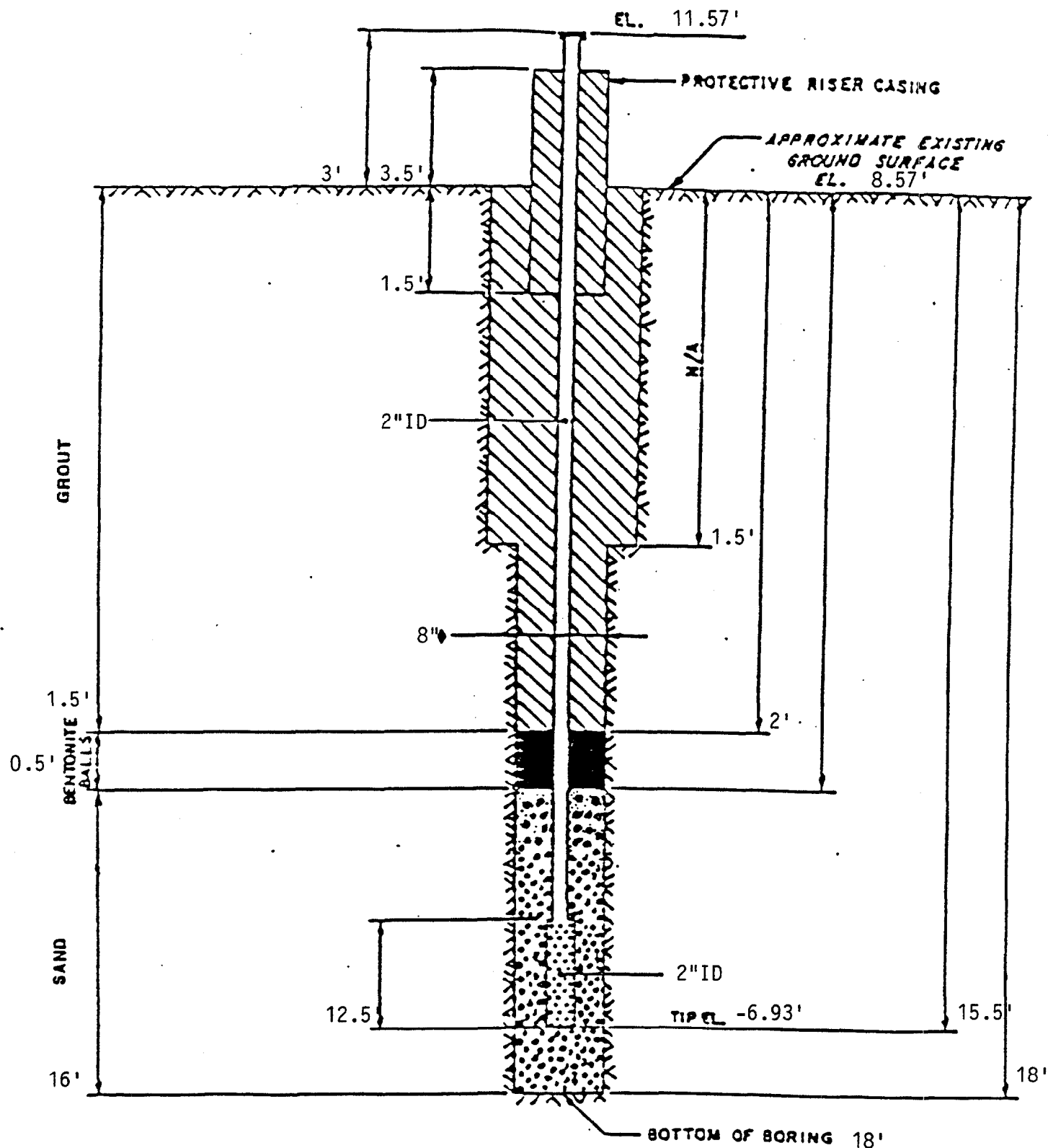
PROJECT NO. Investigation

PROJECT NO. 595392

BORING NO. MW1-1

INSTALLED BY K. Dorsey DATE 6/6/90

CHECKED BY M. Hampton DATE 9/20/90





**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392		PROJECT NAME: Key West Remedial - Location - Site #1	
BORING NUMBER: MW 1-2		COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 3.31		GWL: Depth N/A Date/Time 6/6/90 - 1:30	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: R. Dorsey		Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon			PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	9 10 11 14	100	Fill gravel to sand size Dry, tan	N/A	N/A	N/A	Time 15:00 0.0 ppm OVA
2-4	Split SA Grain Size	14 12 10 14		Fill gravel to sand size Dry, tan				0.0 ppm OVA
4-6		2 8 8 14		Fill gravel to sand size Dry, tan				0.0 ppm OVA
6-8		5 10 10 9		Spoon empty out wet @ 6' Auger rejected Moved forward 3'				0.0 ppm OVA 3 Borings
8-10	MWA Split SA Grain Size	1 2 2		Fill gravel to sand size				15:00
10-12		2 22 7 1		Fill dirt Colites, fine grained				
12-14		10 20 14 14		Limestone, gray Fill dirt to 14.5'				
	✓	12 12 14 16	✓	Colitic Limestone @ 14.5' - 16'	✓	✓	✓	

NOTES:

END of Boring
Drilling Contractor: Drilling Solution
Drilling Equipment: Ford F-700 Mobile Drill
Driller: Kevin & Alex

NOTE: Bentonite pellets
added and allowed
to hydrate, Auger
Down to install
MW installation.

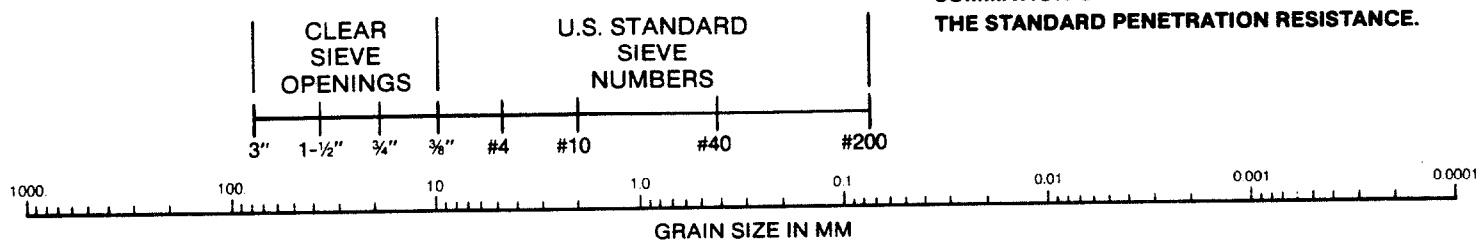
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
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DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

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CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
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	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
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HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

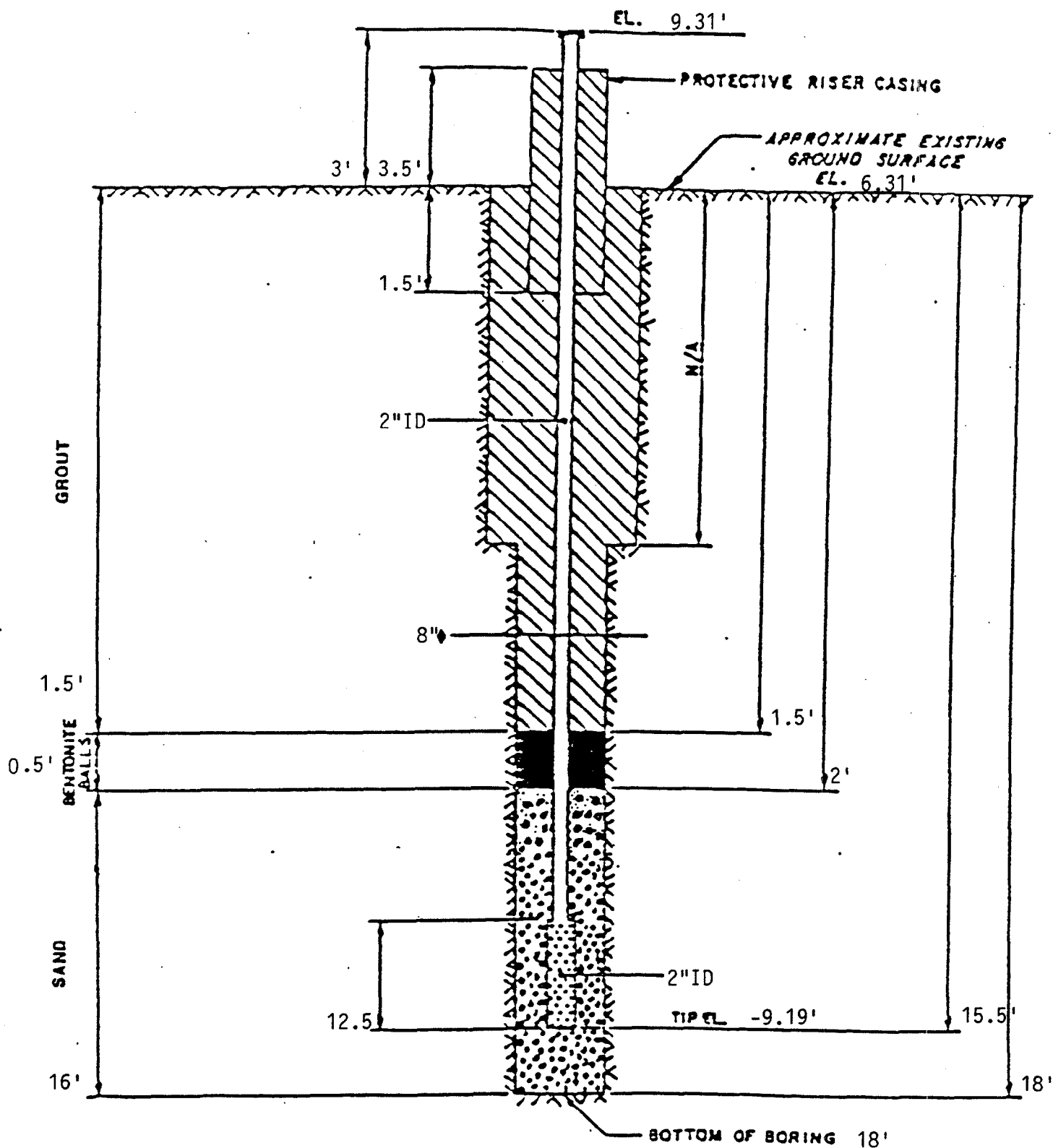


Key West Remedial

INSTALLED BY K. Dorsey DATE 6/6/90

CHECKED BY M. Hampton DATE 9/20/90

_____ 5770750



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>096392</u>	PROJECT NAME: <u>New Jersey Remediation Project</u>	
BORING NUMBER: <u>1001-3</u>	COORDINATES: <u>X 5</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>10.61</u>	GWL: Depth <u>7'</u> Date/Time <u>6/6/90-16:40</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	8 16 12 10		1' Top soil 1' Limestone fill, tan & dry	PT SC	N/A	N/A	Organic Time 16:30
2-4		11 6 7 15		2' Limestone fill brown & dry				
4-6		5 1 1		2' Limestone fill				
6-8	↓	1 1 1 18		wood (refusal Augered down 2-4')				
8-10	MW3 EP Tox	7 8 16 14		2' Fill dirt and fine grain oolitic sand				1700 ppm out of sample
10-12	N/A	8 7 8 7		Fine grained oolitic sand little fill				
12-14		14 12 12 17		12-13 Oolitic sand - fill dirt 13-14 Oolitic white limestone				
	↓			End of Boring	↓	↓	↓	

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F900 Mobile Drill
 Driller: Kevin and Alex

Note: Bentonite pellets added and allowed to hydrate

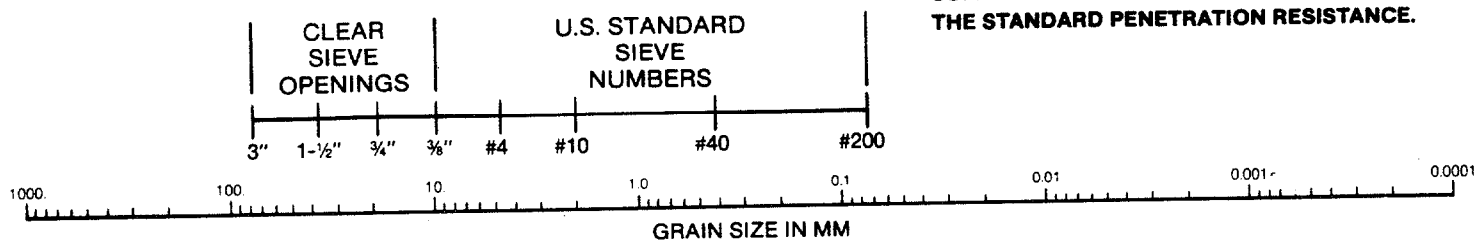
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/6/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW1-3 DATE OF INSTALLATION 6/6/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID(S) USED: <u>N/A</u>	CASING SIZE(S) USED: <u>N/A</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: _____ and D170
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>7'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "O"</u>
TOTAL PERFORATED AREA <u>10'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		10.61	
GROUND SURFACE	0.0		7.61	
BOTTOM OF PROTECTIVE PIPE	1.5		6.11	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.5
	TOP	0.0	TOP	7.31
	BOTTOM	1.5	BOTTOM	5.81
	BOTTOM	1.5	TOP	5.81
PERFORATED SECTION	TOP	1.5	BOTTOM	2.0
	TOP	1.5	TOP	5.31
	BOTTOM	2.0	BOTTOM	5.31
	BOTTOM	2.0	TOP	5.31
PIEZOMETER TIP	TOP	2.0	BOTTOM	14.5
	TOP	2.0	TOP	5.31
	BOTTOM	14.5	BOTTOM	-7.19
	BOTTOM	14.5	TOP	5.31
BOTTOM OF BOREHOLE	TOP	N/A	BOTTOM	N/A
	TOP	N/A	TOP	N/A
	BOTTOM	N/A	BOTTOM	N/A
	BOTTOM	N/A	TOP	N/A
GWL AFTER INSTALLATION	TOP	4.0	BOTTOM	14.0
	TOP	4.0	TOP	3.31
	BOTTOM	14.0	BOTTOM	-6.69
	BOTTOM	14.0	TOP	3.31
BOTTOM OF BOREHOLE		14.5	-7.19	
GWL AFTER INSTALLATION		7.0	0.31	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Bentonite hydrated half hour or more before addition of grout; 2'X2'X6" thick
concrete pad installed. Well developed 6/7/90 for approximately 30 minutes by centrifugal
pump, approximately 20 gallons pumped; water turned from silt grey to clear and silt free.
Measuring tape deconed before and after use. Pump, 5 HP Briggs and Stratton, flow 1 to

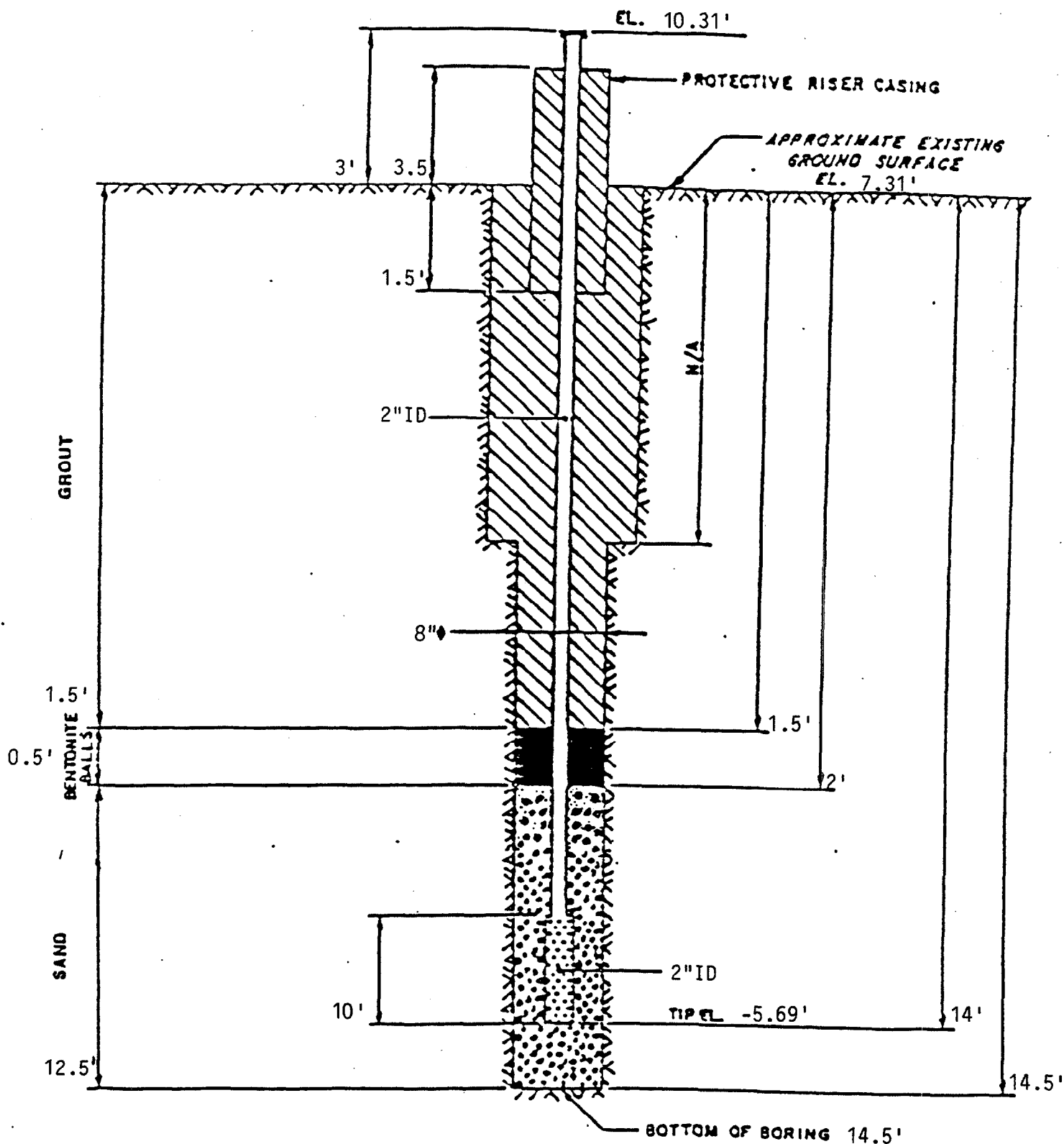


Key West Remedial

INSTALLED BY K. Dorsey DATE 6/6/90

CHECKED BY M. Hampton DATE 9/20/90

DATE 5/20/90



Site 3
Truman Annex DDT Mixing Area

TA/5-91/595392\P1E-PGS.SB8

Well Construction Details
Truman Annex
DDT Mixing Area
Site 3
NAS Key West
Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 3-1	06/02/90	8.49	5.49	10.0	5	0.49 TO -4.51	0.010	7.0	1.0	2.0
MW 3-2	06/02/90	8.23	5.23	10.0	5	0.23 TO -4.77	0.010	7.0	1.0	2.0
MW 3-3	06/02/90	9.09	5.76	9.6	5	1.09 TO -3.91	0.010	7.0	1.0	2.0



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site #3</u>		
BORING NUMBER: <u>mw 3-1</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/2/20</u>	
ELEVATION: <u>8.49</u>	GWL: Depth <u>4.5'</u>	Date/Time: <u>6/2/20-9:35</u>	DATE STARTED: <u>6/2/20</u>
ENGINEER/GEOLOGIST: <u>C. Callagari</u>	Depth: <u>4.5'</u>	Date/Time: <u>N/A</u>	DATE COMPLETED: <u>6/2/20</u>
DRILLING METHODS: <u>Split-Spoon - Hollow Stem Auger</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	Plot 4 VOA Rest. Plot	N/A	N/A	Limestone fill w/ rock + sand	BT	N/A	N/A	Time Organic Vapor (ppm) 9:30 1ppm
2-4	Plot 4 CO-1			Limestone fill w/ old cement				
4-6	N/A			4'-4.5' - Limestone fill w/ old cement 4.5'-6' - Limestone, pretty w/ Rock fragments				
6-8				Limestone, pretty w/ Rock fragments				
8-10				Limestone pretty w/ Rock fragments				9:50 1ppm
				End of Boring				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin GEA

NOTE: Bentonite pellets
 added and mixed
 with water

Blow Counts N/A because of
 communication problems under
 Level "C" conditions.

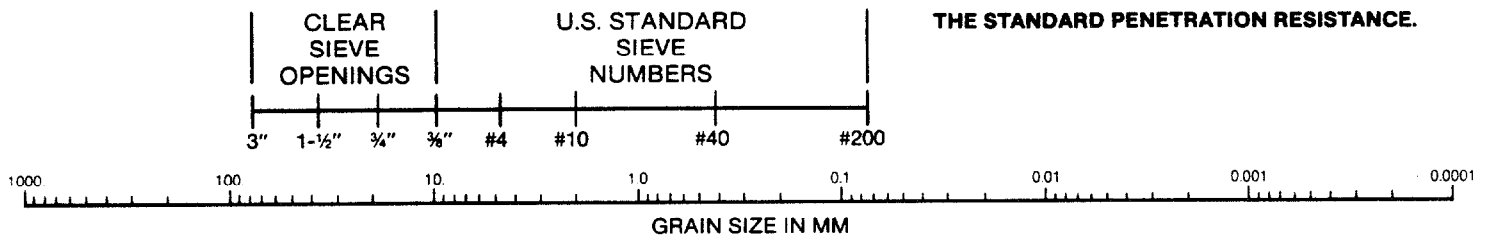
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO.C. Callegari DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW3-1
DATE OF INSTALLATION 6/2/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>8'</u>
TOTAL PERFORATED AREA <u>5'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

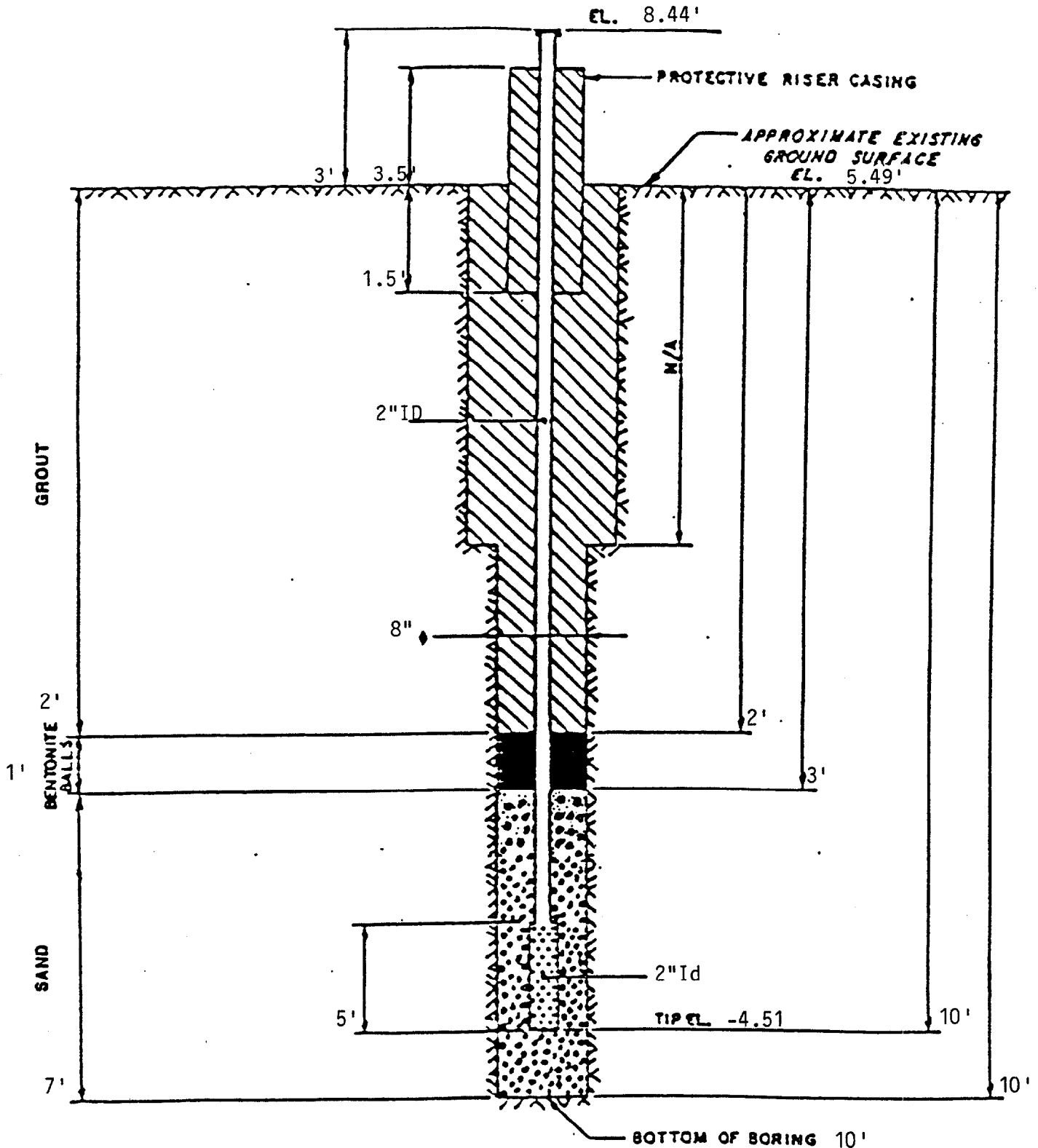
ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		8.49	
GROUND SURFACE	0.0		5.49	
BOTTOM OF PROTECTIVE PIPE	1.5		3.99	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	2.0
	TOP	0.0	TOP	5.49
	BOTTOM	2.0	BOTTOM	3.49
	BOTTOM	2.0	TOP	3.49
	TOP	2.0	BOTTOM	3.0
	TOP	2.0	TOP	3.49
	BOTTOM	3.0	BOTTOM	2.49
	TOP	3.0	BOTTOM	10.0
	TOP	3.0	TOP	2.49
	BOTTOM	10.0	BOTTOM	-4.51
	TOP	N/A	TOP	N/A
	TOP	N/A	BOTTOM	N/A
	BOTTOM	N/A	TOP	N/A
PERFORATED SECTION	TOP	5.0	BOTTOM	10.0
	TOP	5.0	TOP	0.49
	BOTTOM	10.0	BOTTOM	-4.51
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-4.51	
GWL AFTER INSTALLATION	N/A		N/A	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
REMARKS Well was developed until free from silt using a centrifuge pump. Pumped approxi-
mately 20 gallons, changed from dark silty to clear silt free. Pump used to develop well
was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



Key West Remedial

INSTALLED BY C. Callegar DATE 6/2/90
CHECKED BY G. Stephens DATE 9/20/90





INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: <u>Reg West Remedial Investigation - Site 3</u>		
BORING NUMBER: <u>mw 3-2</u>	COORDINATES: <u> </u>	DATE: <u>6/2/90</u>	
ELEVATION: <u>8.23</u>	GWL: Depth <u>5'</u> Date/Time <u>6/2/90, 11:05</u>	DATE STARTED: <u>6/2/90</u>	
ENGINEER/GEOLOGIST: <u>C. Callaguri</u>	Depth <u> </u> Date/Time <u> </u>	DATE COMPLETED: <u>6/2/90</u>	
DRILLING METHODS: <u> </u>	PAGE <u> </u>		OF <u> </u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	Plot 2 Box PCR metals CO	N/A	N/A	C-1 Moderately sorted Top Soil Brown, medium, rounded sand loose, well sorted Limestone Limestone very fine, white	ST N/A	N/A	N/A	11100 1 ppm
2-4				Limestone very fine, white				1 ppm
4-6				Limestone very fine, white				1 ppm
6-8				Limestone very fine, white				1 ppm
8-10				Limestone very fine, white				1 ppm
				8-10' Limestone very fine, white				11135 1 ppm
								Background OVA 1 ppm

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 mobile drill
Driller: Kevin and Ed.

Note: Limestone
Blow count N/A because of
hazardous environment and not
practical because of Level "C"
protective clothing.

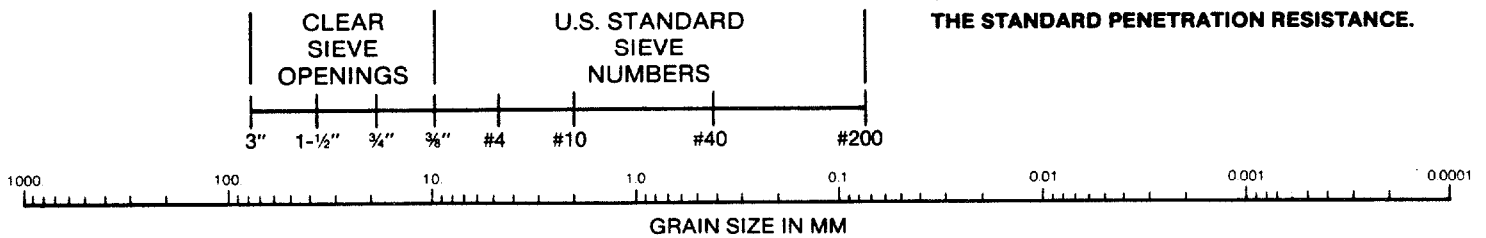
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. C. Callegari DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW3-2 DATE OF INSTALLATION 6/2/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID(S) USED: <u>N/A</u>	CASING SIZE(S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u>and D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>8'</u>
TOTAL PERFORATED AREA <u>5'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		8.23	
GROUND SURFACE	0.0		5.23	
BOTTOM OF PROTECTIVE PIPE	1.5		3.73	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	2.0
	TOP	0.0	BOTTOM	2.0
	TOP	2.0	BOTTOM	3.0
	TOP	3.0	BOTTOM	10.0
PERFORATED SECTION	TOP	3.0	TOP	5.23
	TOP	3.0	TOP	3.23
	TOP	N/A	TOP	2.23
	TOP	N/A	TOP	0.23
PIEZOMETER TIP	TOP	5.0	BOTTOM	-4.77
BOTTOM OF BOREHOLE	TOP	5.0	BOTTOM	-4.77
GWL AFTER INSTALLATION	TOP	N/A	BOTTOM	N/A

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

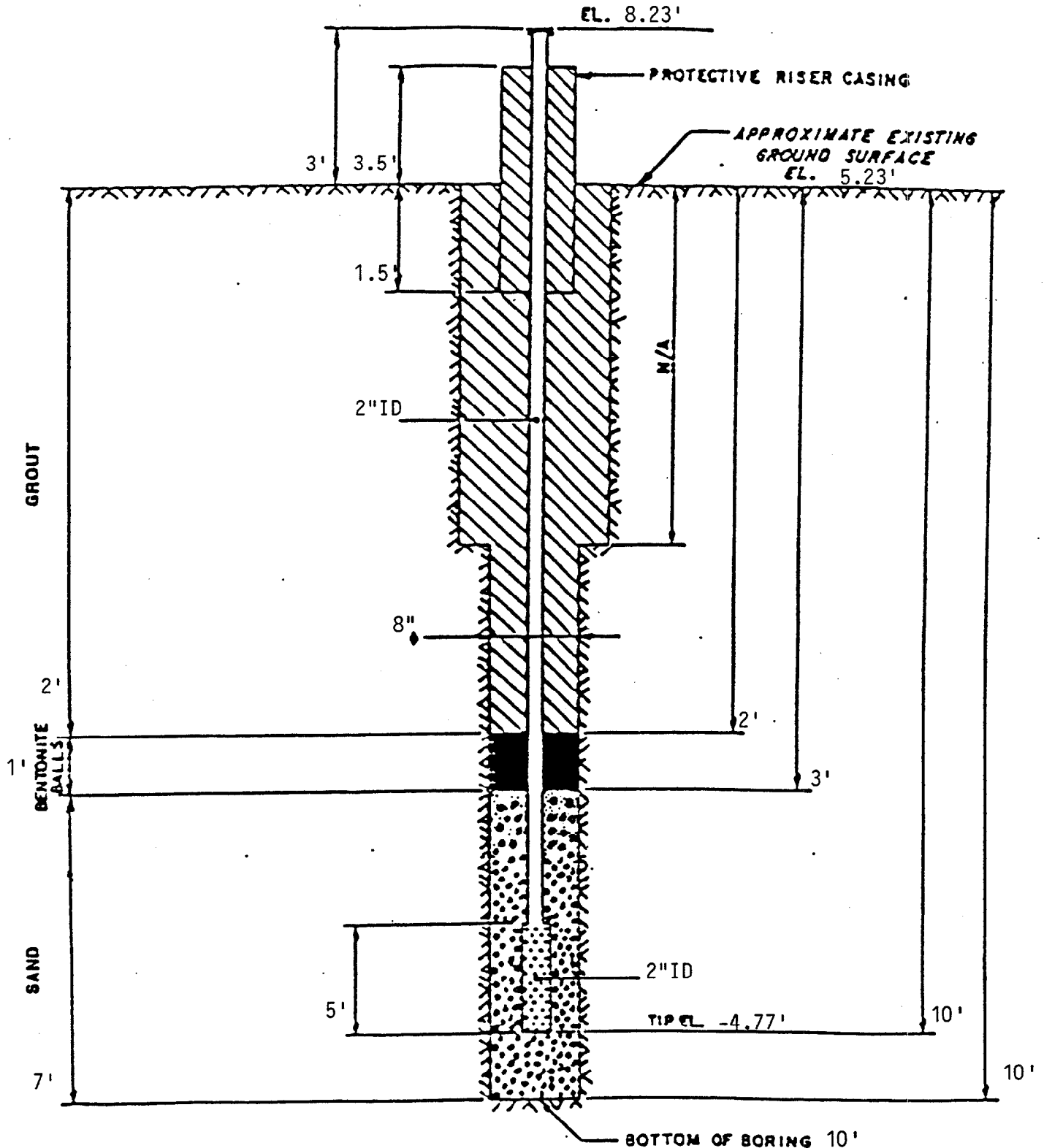
REMARKS Well was developed after installation until free of silt 6/2/90, water removed
by centrifugal pump was approximately 15-20 gallons. Pump used was a 5 HP Briggs and Stratton
with a flow rate of 1 to 2 gpm.



INTERNATIONAL
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MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Key West Remedial Investigation INSTALLED BY C. Callegar DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW3-2





INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 59392	PROJECT NAME: Key West Remedial Investigation CWS 2		
BORING NUMBER: mw 3-3	COORDINATES: N/A	DATE: 6/2/90	
ELEVATION: 9.09	GWL: Depth 5.1	Date/Time 6/2/90-13:05	DATE STARTED: 6/2/90
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/2/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon			PAGE OF

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	No Samples Taken	N/A	N/A	Limestone fill coral + sand	N/A	N/A	N/A	Time 13:00 Organic Vacuum
2-4				Limestone iron chert				1 ppr
4-6				4-6 Limestone water				1 ppr
6-8				Limestone soft due to water				1 ppr
8-10				Limestone fill Soft due to water				1 ppr
				End of Boring				Background CWS 1 ppr

NOTES:

Drilling Contractor

Drilling Solution

Drilling Equipment

Ford F-700 mobile Drill.

Driller:

Kevin + Ed

note: Bentonite added and
allowed to hydrate. Blow
Counts N/A because of
Difficulty in Communications
under level "C" Conditions

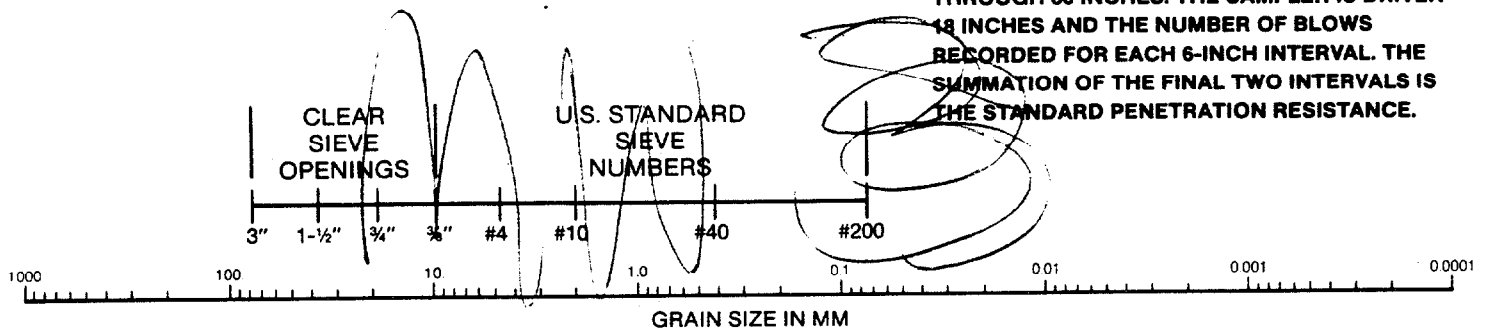
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. C. Callegari DATE 6/3/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW3-3
DATE OF INSTALLATION 6/2/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID(S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u>and D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>8'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush Threaded with "O"</u>
TOTAL PERFORATED AREA <u>5'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.3		9.09	
GROUND SURFACE	0.0		5.76	
BOTTOM OF PROTECTIVE PIPE	1.6		4.59	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	2.0
	TOP	2.0	BOTTOM	3.0
	TOP	3.0	BOTTOM	10.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	4.6	BOTTOM	9.6
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-4.24	
GWL AFTER INSTALLATION	N/A		N/A	

1. THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Well grouted and developed 6/5/90, water removed by centrifugal pump, approxi-
mately 15 gallons, changed from light silty grey to clear sand free. Pump was a 5 HP
Briggs and Stratton with a flow rate of 1 to 2 gpm.

Site 4
Boca Chica Open Disposal Area

TA/5-91/595392\P1E-PGS.SB8

Well Construction Details
 Boca Chica
 Open Disposal Area
 Site 4
 NAS Key West
 Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 4-1	06/02/90	4.79	1.79	15	12.5	-0.71 TO -13.21	0.010	19.0	0.5	0.5
MW 4-2	06/02/90	5.08	2.08	13	10.0	-0.92 TO -10.92	0.010	18.0	0.5	1.5
MW 4-3	06/04/90	4.91	1.91	16	15.0	0.91 TO -14.09	0.010	19.0	0.5	0.5
MW 4-4	06/04/90	4.91	1.91	17	15.0	-0.09 TO -15.09	0.010	19.0	0.5	0.5
MW 4-5R	06/23/90	5.35	2.35	17	15.0	0.35 TO -14.65	0.010	19.0	0.5	0.5



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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Street 4	
BORING NUMBER: mw 4-1	COORDINATES: N/A	DATE: 6/2/90
ELEVATION: 4.79	GWL: Depth 1' Date/Time 6/2/90-09:30	DATE STARTED: 6/2/90
ENGINEER/GEOLOGIST: J. Buerhop	Depth N/A Date/Time N/A	DATE COMPLETED: 6/2/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	1	N/A	Silty Limestone, white/brown Some mangrove material Water level @ 1'	N/A	N/A	N/A	Organic Time Vapors ppm
2-4	4-1: VOA BNA Metal E-10K	1 1 1 30		Limestone White, consolidated				09:30 1ppm
4-6	N/A	7 9 10 21		Limestone, white Consolidated				1ppm
6-8		20 22 22 32		Limestone, white Consolidated				1ppm
8-10		12 09 10 13		Limestone, white Consolidated				1ppm
10-12		14 17 12 10		Limestone, white Consolidated				1ppm
12-14		09 11 13 10		Limestone, white Consolidated				1ppm
		12 13						1ppm

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Hollow Stem Auger
 Driller: Nick (Atack Assoc., Inc.)

NOTE: Bentonite pellets
 used and allowed
 to hydrate

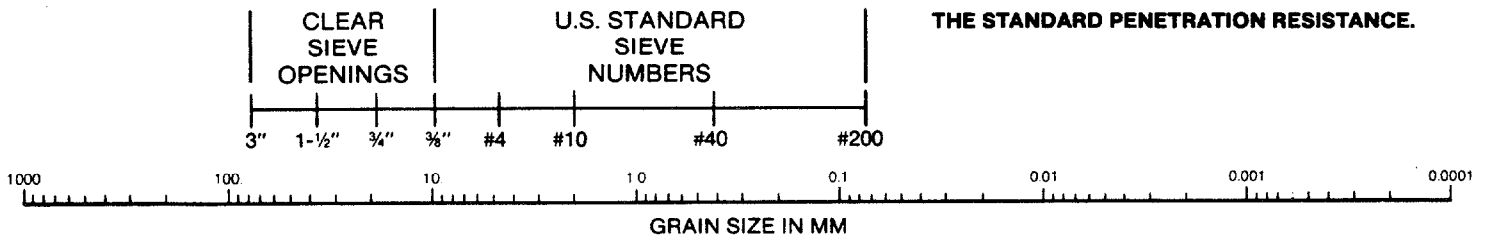
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation - Zone 4	
BORING NUMBER: MW 4-1	COORDINATES: N/A	DATE: 6/2/90
ELEVATION: 4.79	GWL: Depth 1' Date/Time 6/2/90 - 09:30	DATE STARTED: 6/2/90
ENGINEER/GEOLOGIST: J. Buerhod	Depth N/A Date/Time N/A	DATE COMPLETED: 6/2/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 2 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	N/A	11 19	N/A	Limestone, white consolidated	N/A	N/A	N/A	Soil Time
16-18	✓	20 17 20 22	✓	Limestone, white consolidated	✓	✓	✓	10:05 10pm
				End of boring				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Hollow Stem Auger
Driller: Mike (Atack Assoc., Inc.)

NOTE: Bentonite slurry
added and allowed
to hydrate

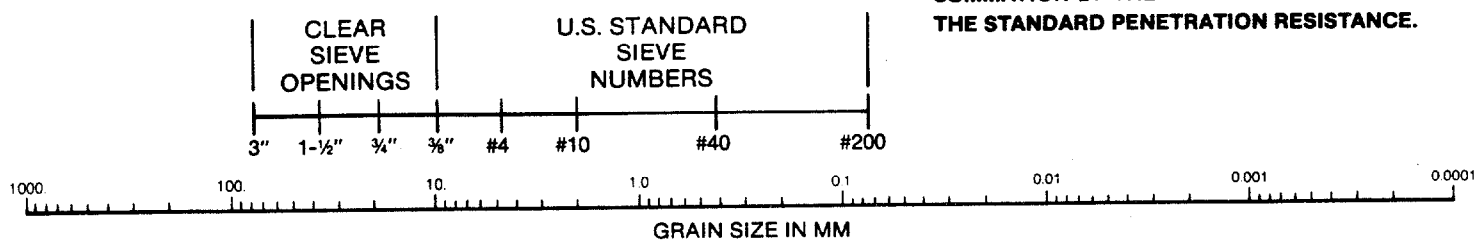
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. J. Buerhop DATE 6/2/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW4-1 DATE OF INSTALLATION 6/2/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u>and D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>5.5'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "0"</u>
TOTAL PERFORATED AREA <u>12.5'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		4.79	
GROUND SURFACE	0.0		1.79	
BOTTOM OF PROTECTIVE PIPE	1.5		0.29	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.0	TOP	1.79
	BOTTOM	0.5	BOTTOM	1.29
	BOTTOM	0.5	TOP	1.29
PERFORATED SECTION	TOP	0.5	BOTTOM	1.0
	TOP	1.0	TOP	0.79
	BOTTOM	20.0	BOTTOM	-18.21
	TOP	1.0	TOP	0.79
PIEZOMETER TIP	TOP	N/A	BOTTOM	N/A
	TOP	N/A	TOP	N/A
	BOTTOM	N/A	BOTTOM	N/A
	TOP	N/A	TOP	N/A
PERFORATED SECTION	TOP	2.5	BOTTOM	15.0
PIEZOMETER TIP	TOP	-0.71	BOTTOM	-13.21
BOTTOM OF BOREHOLE	20.0		-18.21	
GWL AFTER INSTALLATION	2.83		-1.04	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

REMARKS Well was developed 6/2/90 producing clear sand/silt free water. Pumped 10 gallons by centrifugal pump. Coupling with extension was added to the PVC riser to reach the required 3 ft. height. Pump used to develop wells was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



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MONITOR WELL INSTALLATION SKETCH

Key West Remedial

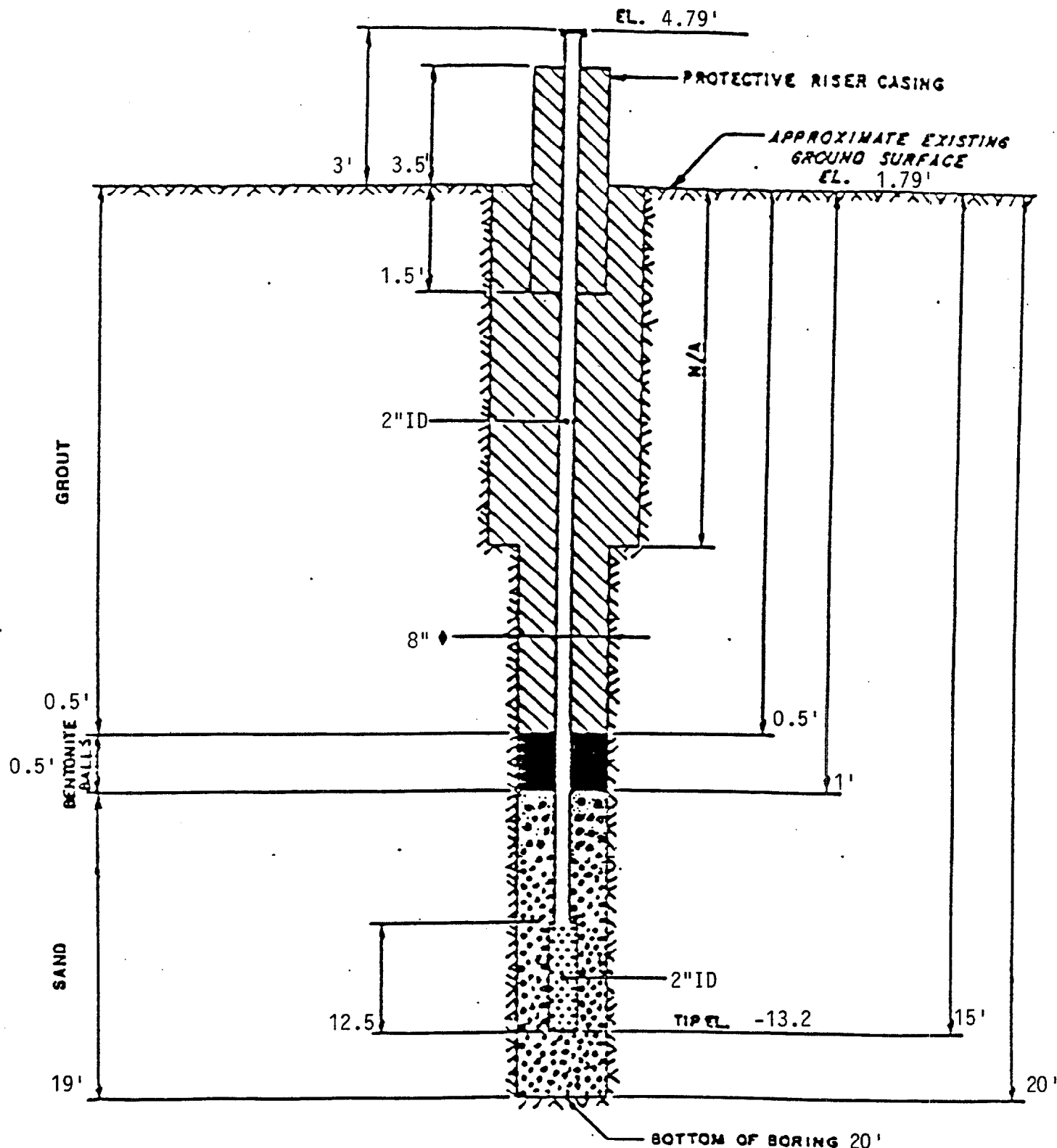
PROJECT NAME Investigation

INSTALLED BY J. Buerhop DATE 6/2/90

PROJECT NO. 595392

CHECKED BY G. Stephens DATE 9/20/90

BORING NO. MW4-1





INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Lowest Remedial Investigation - Site -	
BORING NUMBER: MW 4-2	COORDINATES: N/A	DATE: 6/2/90
ELEVATION: 5.08	GWL: Depth 2.9" Date/Time 6-2/1420	DATE STARTED: 6/2/90
ENGINEER/GEOLOGIST: J. Buerhod	Depth N/A Date/Time N/A	DATE COMPLETED: 6/2/90
DRILLING METHODS: Hollow Stem Auger/Split Spoon		PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (0.5')	RECOVERY ft.	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0.5	N/A	17			N/A	N/A	N/A	Organic
1.0		20	1.5	Limestone, dry				Time
1.5		17		white & consolidated				14:20
2.0	↓	7						
2.5		>50		Refusal @ 2.0' augered				
		>50		to 2.5				14:30 1ppm
	4-2							
	USA			Refusal 2.5' augered				
	BNA			2.0'				
	metal							
5.0	ED 70X							
	N/A	150						
			NA	Refusal @ 5'				
7.5				Augered to 10.0				
								1ppm
10.		51	0.5	Limestone				
		51		white, consolidated				
		51						
12.5		155						
		8						
		6	1.5					
		6						
		8						
		10	1.0					
15	✓	12			✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Hollow Stem Auger
Driller: Nick (Ateck Assoc., Inc.)

NOTE: Bentonite pellets
added and allowed
to hydrate

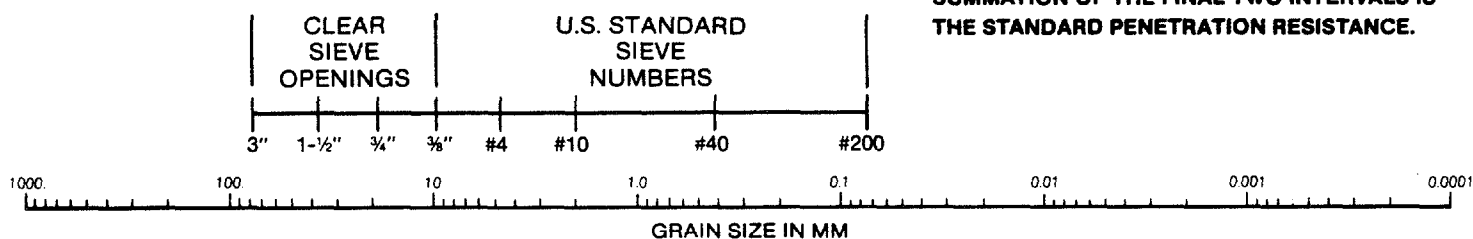
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation, Phase 2	
BORING NUMBER: mw 4-2	COORDINATES: N/A	DATE: 6/2/90
ELEVATION: 37.08	GWL: Depth 2.7' Date/Time 6/2-1120	DATE STARTED: 6/2/90
ENGINEER/GEOLOGIST: J. Buerling	Depth N/A Date/Time 7/1	DATE COMPLETED: 6/2/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 2 OF 2

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (0.5')	RECOVERY ft	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
15.10	N/A	10		Limestone	N/A	N/A	N/A	Time 3:40 PM
		9	11.0	white - consolidated				
		15						
		13						
17.5		12	0.5	Limestone				
		10		white - consolidated				
		10						
		12	0.5					
20.0		15						
		8						
				End of Boring				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Hollow Stem Auger
Driller: Nick (Attek Assoc., Inc.)

NOTE: Bentonite pellets used
and flowed in bore

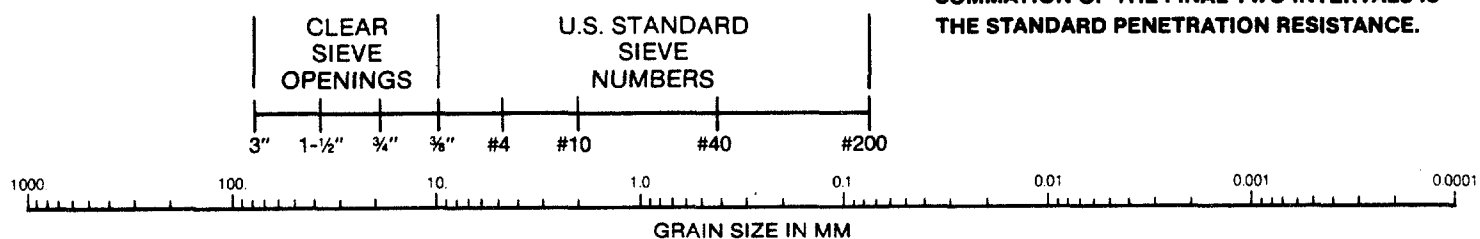
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. J. Buerhop DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW4-2
DATE OF INSTALLATION 6/2/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>6'</u>
TOTAL PERFORATED AREA <u>10'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		5.08	
GROUND SURFACE	0.0		2.08	
BOTTOM OF PROTECTIVE PIPE	1.5		0.58	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.5
	TOP	0.0	TOP	2.08
	BOTTOM	1.5	BOTTOM	0.58
	BOTTOM	2.0	BOTTOM	0.08
PERFORATED SECTION	TOP	2.0	TOP	0.08
	BOTTOM	20.0	BOTTOM	-17.92
	TOP	N/A	TOP	N/A
	BOTTOM	N/A	BOTTOM	N/A
PIEZOMETER TIP	TOP	3.0	TOP	-0.92
BOTTOM OF BOREHOLE	BOTTOM	13.0	BOTTOM	-10.92
GWL AFTER INSTALLATION	1.5		0.58	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

MARKS Well developed 6/2/90, produced clear sand/silt free water after pumping 15
gallons by centrifugal pump. A coupling with extension was added to the PVC riser in
order to reach the required 3 ft. height. Pump used was a 5 HP Briggs and Stratton with
a 1 to 2 gpm flow rate.



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MONITOR WELL INSTALLATION SKETCH

Key West Remedial

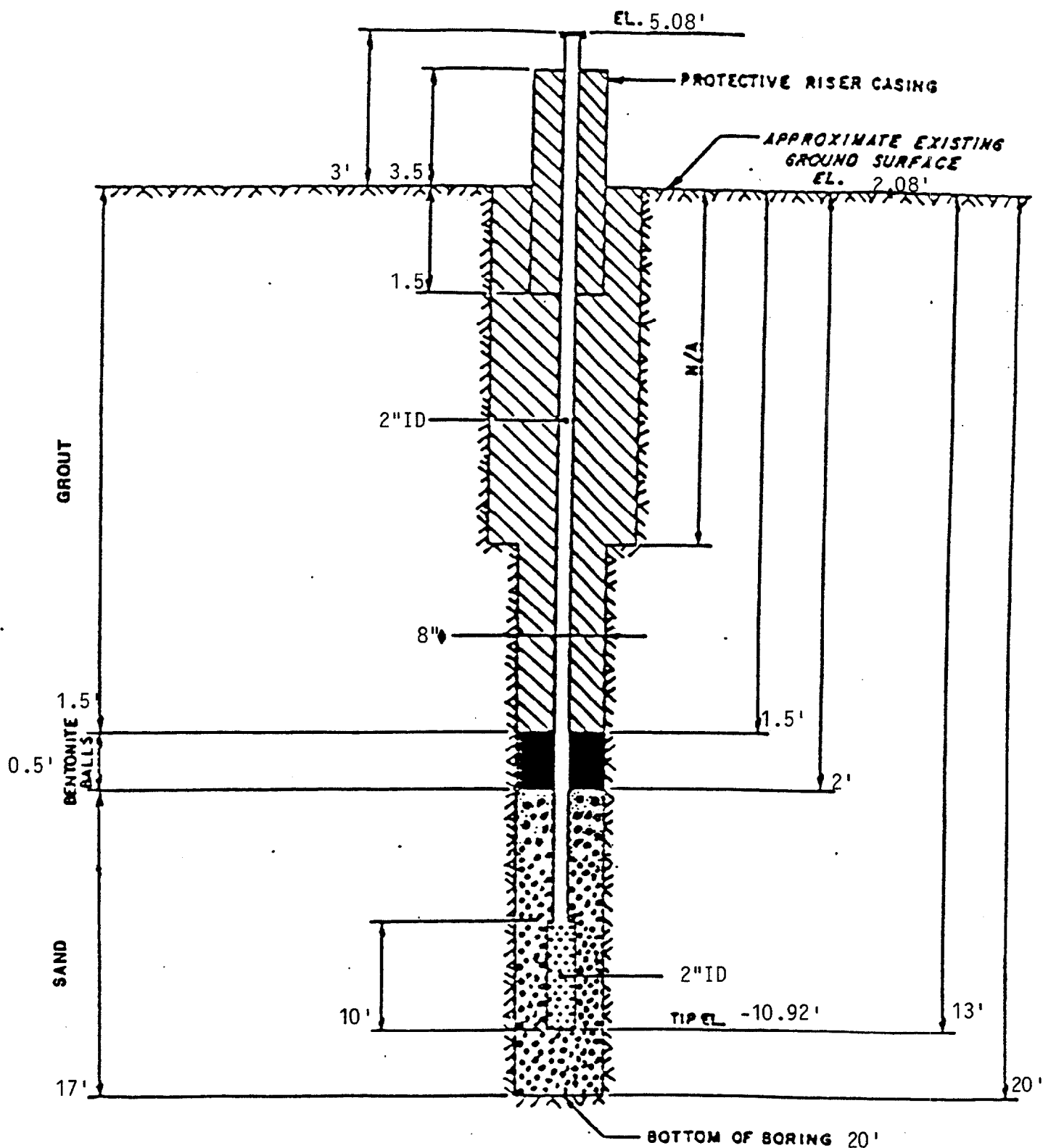
PROJECT NAME Investigation

INSTALLED BY J. Buerhop DATE 6/2/90

PROJECT NO. 595392

CHECKED BY G. Stephens DATE 9/20/90

BORING NO. MW4-2





INTERNATIONAL
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CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>575392</u>	PROJECT NAME: <u>Reclamation - Remediation Project</u>	
BORING NUMBER: <u>NW-3</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/4/90</u>
ELEVATION: <u>100</u>	GWL: Depth <u>1.5'</u> Date/Time <u>6-4-90</u>	DATE STARTED: <u>6-4-90</u>
ENGINEER/GEOLOGIST: <u>J. L. Jones</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6-4-90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>2</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-4	TCL VOA 3a	8 18 15	N/A	Too hard to Split Spoon Augered down to 4'	N/A	N/A	N/A	Time Organic Vapor (ppm) 14:00 1.0ppm 14:05
4-6	TCL BNA 3b	12 22 19		Gravel fill / Oolitic Limestone				1.0ppm
6-8	TCL BNA 3b	22 17 18		Gravel fill Oolitic Limestone				14:20
8-10	TAL Metals 3c	38 45 43		Oolitic Limestone Tan + Wet				1.0ppm
10-12		37 44 48		Oolitic Limestone Tan + Wet				14:25 1.0ppm
12-14		18 8 9		Oolitic Limestone Tan + Wet				1.0ppm
14-16		11 20 12 16 18 17 20		Oolitic Limestone Tan - Wet				1.0ppm

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 Mobile drill
Driller: Scott Jones

Note: Bentonite pellets
added and allowed
to hydrate

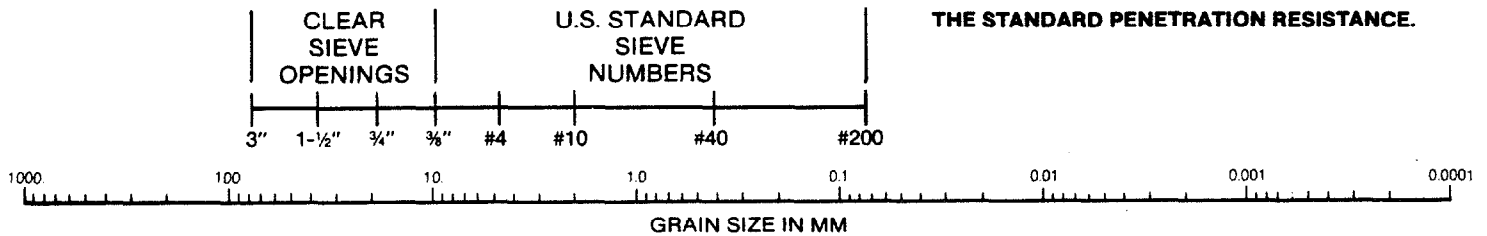
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation Site #4		
BORING NUMBER: MW4-3	COORDINATES: N/A	DATE: 6/4/90	
ELEVATION: 4.91	GWL: Depth 1.5	Date/Time 6-4/1400	DATE STARTED: 6/4/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/4/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon			PAGE 2 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
16-18	EP TOX	21 22	N/A	Oolitic Limestone Tan + Wet	N/A	N/A	N/A	Time Organic Vapor, ppm Background 1.0 ppm
18-20	EP TOX 3d	18 15 17 21	↓	Oolitic Limestone Tan + Wet	↓	↓	↓	at boring 14:45 1.0 ppm
				End of Boring				15:15 Finish

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin and Alex

note: Bentonite pellets added
and allowed to hydrate

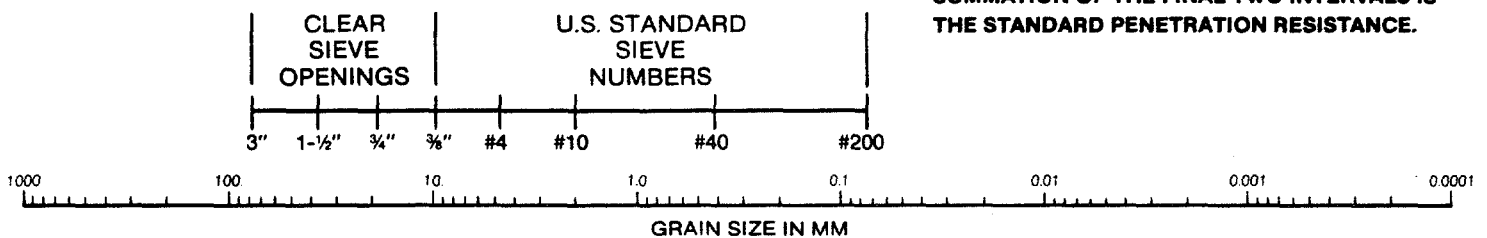
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW4-3 DATE OF INSTALLATION 6/4/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>4'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		4.91	
GROUND SURFACE	0.0		1.91	
BOTTOM OF PROTECTIVE PIPE	1.5		0.40	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.0	TOP	1.91
	BOTTOM	0.5	BOTTOM	1.41
	BOTTOM	0.5	TOP	1.41
PERFORATED SECTION	TOP	0.5	BOTTOM	1.0
	TOP	1.0	TOP	0.91
	BOTTOM	20.0	BOTTOM	-18.09
PIEZOMETER TIP	TOP	N/A	TOP	N/A
	BOTTOM	N/A	BOTTOM	N/A
	TOP	N/A	TOP	N/A
PERFORATED SECTION	TOP	1.0	BOTTOM	16.0
PIEZOMETER TIP	TOP	1.0	TOP	0.91
BOTTOM OF BOREHOLE	TOP	1.0	BOTTOM	-14.09
GWL AFTER INSTALLATION	TOP	1.7	TOP	0.91
	TOP	1.7	BOTTOM	-14.09
	TOP	1.7	TOP	0.91
	TOP	1.7	BOTTOM	-14.09

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Well developed 6/4/90, approximately 20 gallons of water pumped by centrifugal pump to produce silt/sand free, clear water. Pump used was a 5 HP Briggs and Stratton with a 1 to 2 gpm flow rate.



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595-392	PROJECT NAME: Key West Remedial Investigation - Site 4		
BORING NUMBER: mw 4-4	COORDINATES: N/A	DATE: 6/5/90	
ELEVATION: 4.91	GWL: Depth 3'	Date/Time 6/5/90 - 08:50	DATE STARTED: 6/5/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/5/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon			PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
								Time Organic Vapor (ppm)
0-2	7-2 VOA	8 9 6 2	N/A	1-2' Dry Limestone Fill w/ Gravel	N/A	N/A	N/A	8:50 0.00ppm OVA
2-4	2-3-4 EVA MSAL	2 2 2 1		2'-4' Wet Limestone Fill w/ Gravel				9:00 2.0ppm OVA
4-6		2 23 27		Oolite Limestone wet + tan				
6-8		14 20 23 28		Oolite Limestone wet + tan				4ppm OVA
8-10		16 20 12 30		Oolite Limestone wet + tan				5ppm OVA
10-12		12 14 21 23		Oolite Limestone wet + tan				6ppm OVA
12-14		24 18 19 22		Oolite Limestone wet + tan				3ppm OVA
14-16		14 18		Oolite Limestone wet + tan				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Cardi-F 100 Mobile Drill
Driller: Kevin - Alex

NOTE: Bentonite pellets
added and allowed
to hydrate

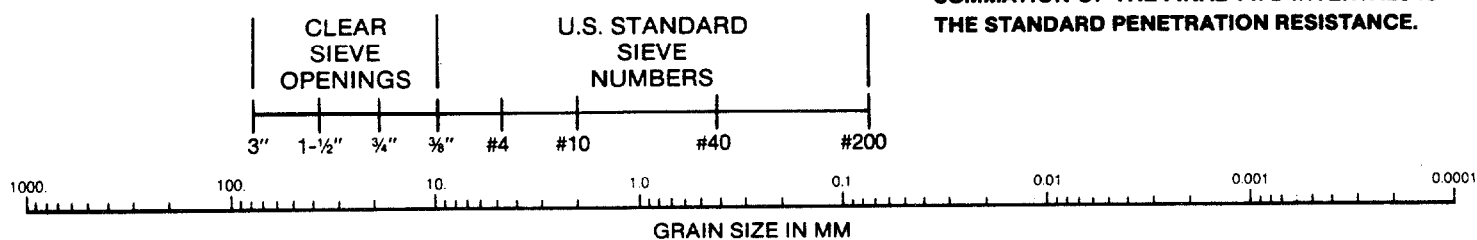
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation 5109	
BORING NUMBER: 100-4	COORDINATES: 22-4	DATE: 6/5/90
ELEVATION: 5.0	GWL: Depth 3' Date/Time 6/5/90-08:30	DATE STARTED: 6/5/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A Date/Time N/A	DATE COMPLETED: 6/5/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 2 OF 2

DEPTH ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16		9		Dolite Limestone	N/A	N/A	N/A	14pm
		16		Weathered				OVA
		14						
		27		Dolite Limestone				12pm
		26		Weathered				OVA
16-18		30						
		12		Dolite Limestone				30pm
		17		Weathered				OVA
18-20	4d EPox	17						
		7		End of boring				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 Mobile Unit
Driller: Kevin & Alex

NOTE: Bentonite pellets
used and allowed
to hydrate

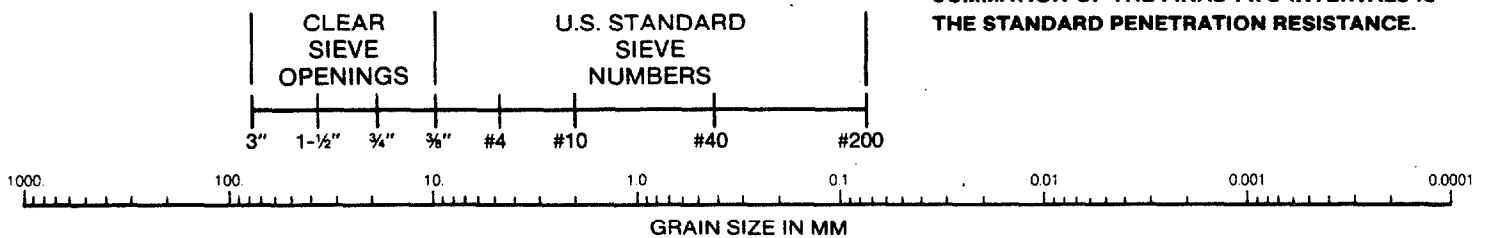
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 6/4/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW4-4
DATE OF INSTALLATION 6/4/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>5'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "O"</u>
TOTAL PERFORATED AREA <u>15'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		4.91	
GROUND SURFACE	0.0		1.91	
BOTTOM OF PROTECTIVE PIPE	2.0		0.09	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.0	TOP	1.91
	BOTTOM	0.5	BOTTOM	1.41
	TOP	0.5	TOP	1.41
PERFORATED SECTION	TOP	1.0	BOTTOM	20.0
	TOP	1.0	TOP	0.91
	BOTTOM	20.0	BOTTOM	-14.09
	TOP	N/A	TOP	N/A
PIEZOMETER TIP	TOP	N/A	BOTTOM	N/A
	TOP	2.0	TOP	0.91
	BOTTOM	17.0	BOTTOM	-14.09
	TOP	2.0	TOP	0.91
BOTTOM OF BOREHOLE	20.0		-17.09	
GWL AFTER INSTALLATION	1.25		0.66	

IS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
REMARKS Well developed 6/4/90 approximately 20 gallons by centrifugal pump until clear
and sand free. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.

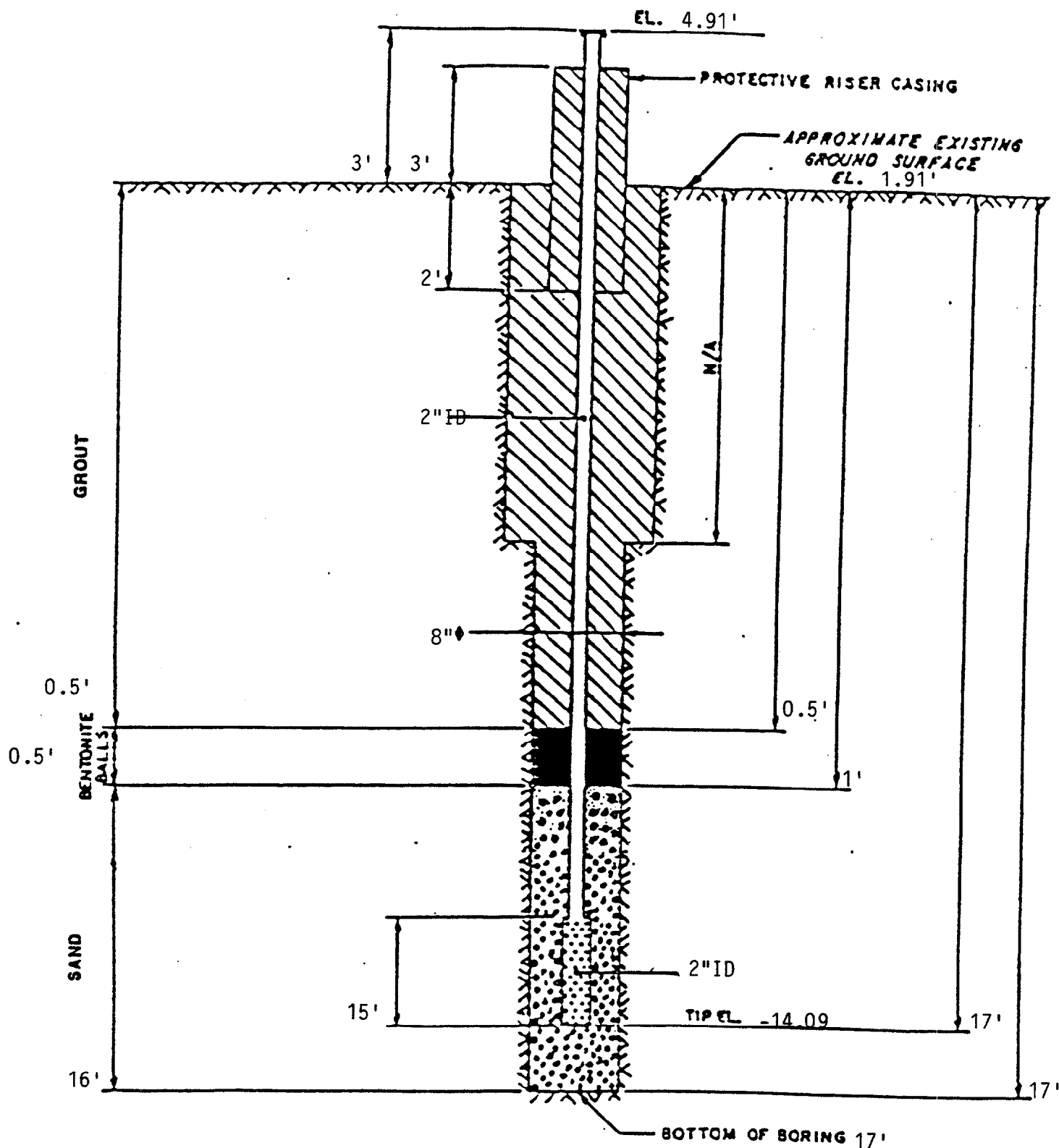


Key West Remedial

INSTALLED BY G. Stephens DATE 6/4/90

CHECKED BY M. Hampton DATE 9/20/90

CHECKED BY M. Hampton DATE 9/20/90





**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>	PROJECT NAME: <u>Key West - Environmental Protection - 11-31-94</u>	
BORING NUMBER: <u>MW4-5R</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/23/90</u>
ELEVATION: <u>57.35</u>	GWL: Depth <u>2.08</u> Date/Time <u>6/23/90 - 13:00</u>	DATE STARTED: <u>6/23/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>N/A</u> Date/Time	DATE COMPLETED: <u>6/23/90</u>
DRILLING METHODS: <u>Shallow Stem Augering / Split Spoon</u>		PAGE <u>1</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
		4	N/A	0-1.5' Top Soil	PT	N/A	N/A	Organic Time
0-2		5		1.5'-2' Oolitic Limestone tan + dry	N/A			13:00 1.0 ppm
2-4		6		2'-4' Oolitic Limestone tan + wet				1.0 ppm
4-6		40		4'-6' Oolitic Limestone tan + wet				1.0 ppm
6-8		46		6'-8' Oolitic Limestone tan + wet				0 ppm
8-10		48		8'-10' Oolitic Limestone tan + wet				0 ppm
10-12		30		10'-12' Oolitic Limestone tan + wet				0 ppm
12-14		21		12'-14' Oolitic Limestone tan + wet				0 ppm
		18						
		20						
		21						
		24						
		22						
		19						
		15						

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin & Alex

Note: Bentonite pellets
 added and allowed
 to hydrate
 Development and Grouting
 after bentonite
 seal complete

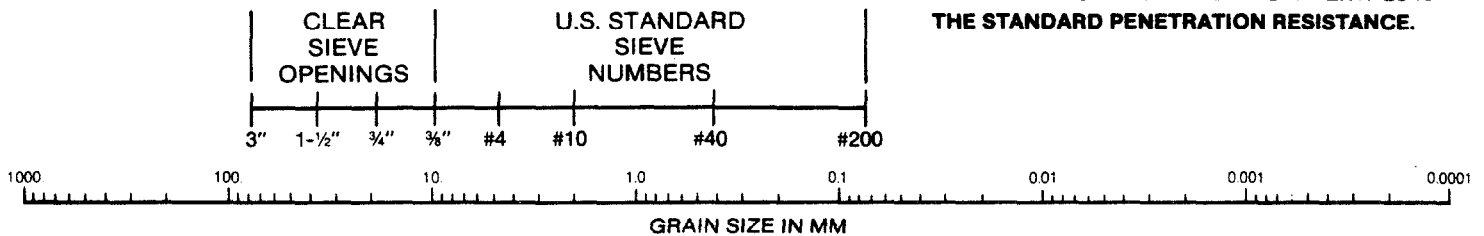
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation Site	
BORING NUMBER: MW4-5R	COORDINATES: N/A	DATE: 6/23/90
ELEVATION: 5.35	GWL: Depth 1.08 Date/Time 6/23/90-13:00	DATE STARTED: 6/23/90
ENGINEER/GEOLOGIST: K. Dorcey	Depth N/A Date/Time N/A	DATE COMPLETED: 6/23/90
DRILLING METHODS: 4" Hollow Stem Auger, 1/2" Split Spoon	PAGE 2	OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	N/A	18 21	N/A	14-16' Colitic Limestone white + wet	N/A	N/A	N/A	Time Organic Vapor(ppm)
16-18		16 21 22 22		16'-18' Colitic Limestone white + wet				0ppm
18-20	✓	19 20 18 19	✓	18'-20' Colitic Limestone white + wet	✓	✓	✓	13:45 0ppm
				End of Boring				Auger down Install Replacement 1/2" MW4-5R @ 14:15 Background 0ppm

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

NOTE: Bentonite pellets
added and allowed to
hydrate. Development and
Grouting after bentonite
seal complete.

CONSISTENCY OF COHESIVE SOILS

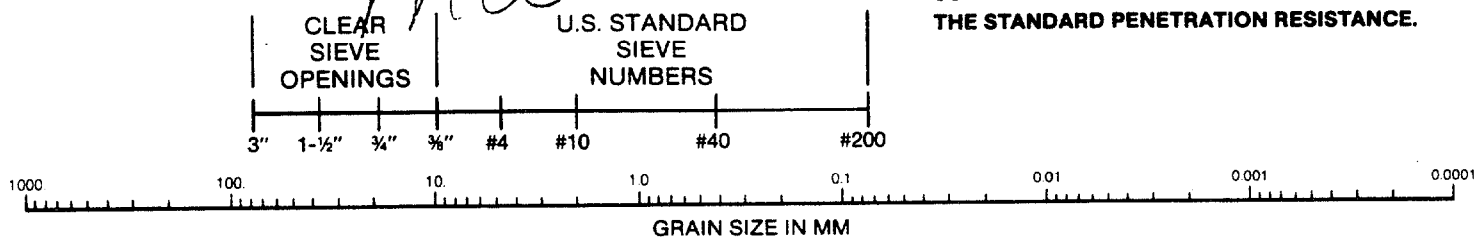
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

Site 4
mw



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/23/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW4-5R
DATE OF INSTALLATION 6/23/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE /BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		5.35	
GROUND SURFACE	0.0		2.35	
BOTTOM OF PROTECTIVE PIPE	1.5		.85	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.5	BOTTOM	1.0
	TOP	1.0	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	2.0	BOTTOM	17.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-17.65	
GWL AFTER INSTALLATION	2.08		0.27	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

MARKS Well was developed 6/23/90 by centrifugal pump, pumped approximately 15 gallons until clear and sand, silt free water observed. This is the replacement well requested by the Navy. Pump used was a 5 HP Briggs and Stratton with a 1 to 2 gpm flow rate.

MONITOR WELL INSTALLATION SKETCH

Key West Remedial

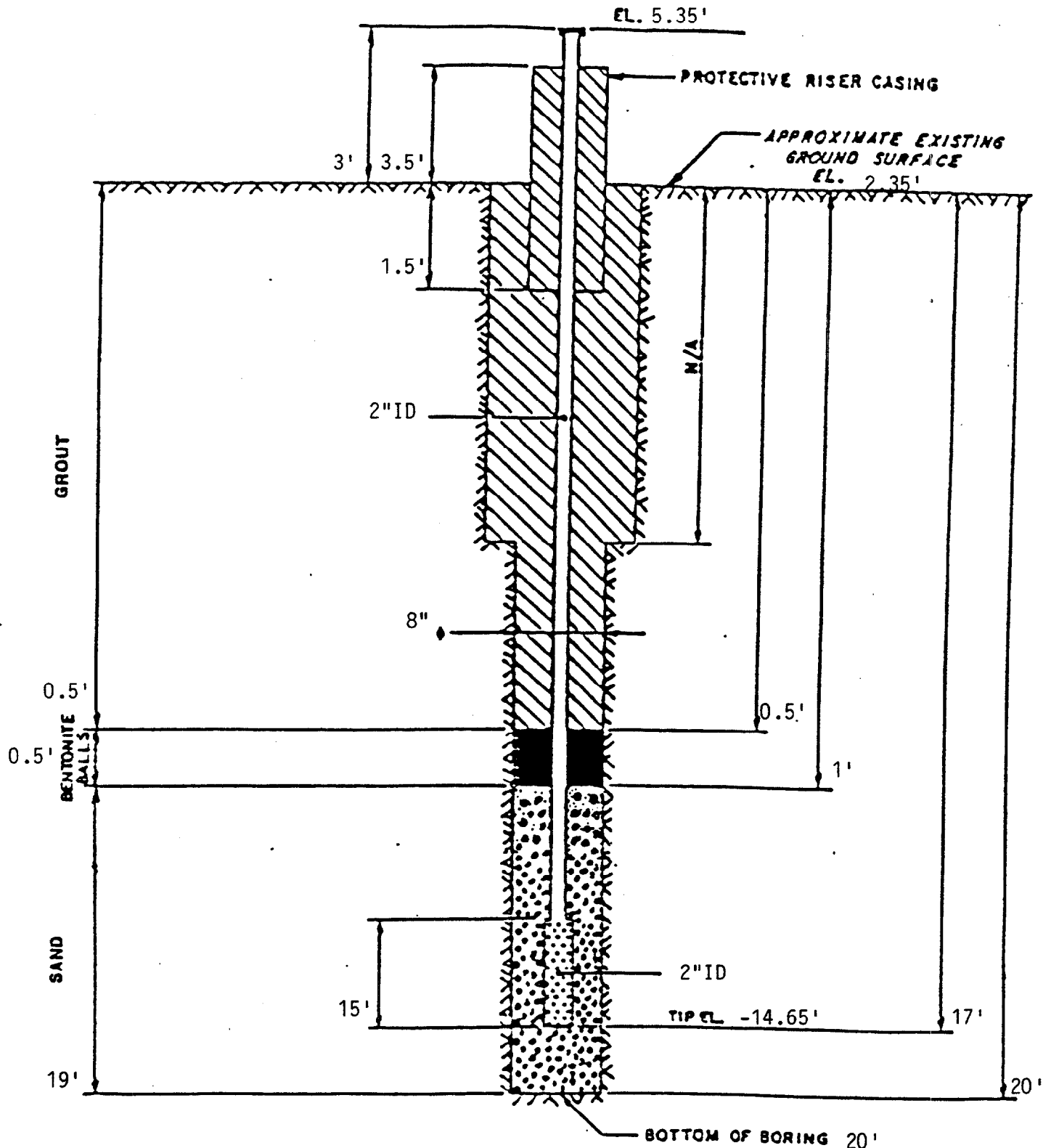
PROJECT NAME Investigation

INSTALLED BY K. Dorsey DATE 6/23/90

PROJECT NO. 595392

CHECKED BY G. Stephens DATE 9/20/90

BORING NO. MW4-5R



**Site 5
DDT Mixing Area**

TA/5-91/595392\P1E-PGS.SB8

WELL CONSTRUCTION DETAILS - SITE 5

**Boca Chica, DDDT Mixing Area
NAS-Key West
Key West, Florida
IT Project No. 595392**

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft) MSL	GROUND SURFACE ELEVATION (ft) MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (in)	THICKNESS OF SAND PACK (ft)	THICKNESS OF BENTONITE SEAL (ft)	THICKNESS OF GROUT COLUMN (ft)
MW 5-1	06/22/90	7.70	4.70	10	5	0.30 to -5.30	0.010	7.0	1.5	1.5
MW 5-2	06/22/90	7.50	4.50	10	5	-0.50 to -5.50	0.010	7.0	1.5	1.5
MW 5-3	06/22/90	7.47	4.47	10	5	-0.53 to -5.53	0.010	7.0	1.5	1.5

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site 5</u>	
BORING NUMBER: <u>mw5-1</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/22/90</u>
ELEVATION: <u>7.70</u>	GWL: Depth <u>2'</u> Date/Time <u>6/22/90 - 15:10</u>	DATE STARTED: <u>6/22/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/22/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	N/A	N/A	2" Top Soil	PT	N/A	N/A	Original
0-2				1" 10" Limestone Fill	MC			Time 15:05 1ppm
				Grout				
2-4				Limestone Fill				
				Grout				
4-6				Limestone Fill				
				Grout				
6-8				Limestone Fill				
				Grout				
8-10	✓	✓	✓	Limestone Fill	✓	✓	✓	15:30 1ppm
				Grout				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin Izzel Alex Ed

Note: Carbonate Limestone
 and unconsolidated
 Block Limestone N/A
 Carbonate Limestone
 Grout

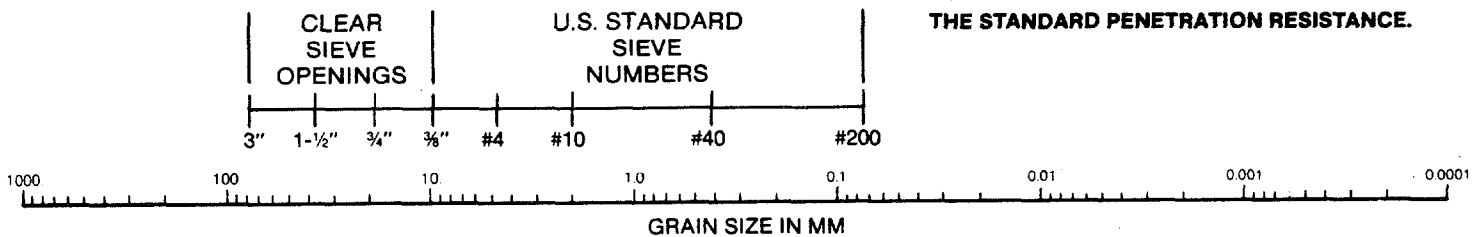
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-1 DATE OF INSTALLATION 6/22/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>8'</u>
TOTAL PERFORATED AREA <u>5'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		7.70	
GROUND SURFACE	0.0		4.70	
BOTTOM OF PROTECTIVE PIPE	2.0		3.70	
BOREHOLE FILL MATERIALS: GROUT <u>Type I Cement</u> <u>ASTM C150</u> BENTONITE <u>3/8" Pellets</u> SAND <u>20/30 Silica,</u> <u>ASTM C775</u> GRAVEL <u>N/A</u>	TOP	0.0	BOTTOM	1.5
	TOP	0.0	BOTTOM	1.5
	TOP	1.5	BOTTOM	3.0
	TOP	3.0	BOTTOM	10.0
PERFORATED SECTION	TOP	5.0	BOTTOM	10.0
	TOP	5.0	BOTTOM	10.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-5.30	
GWL AFTER INSTALLATION	2.0		2.70	

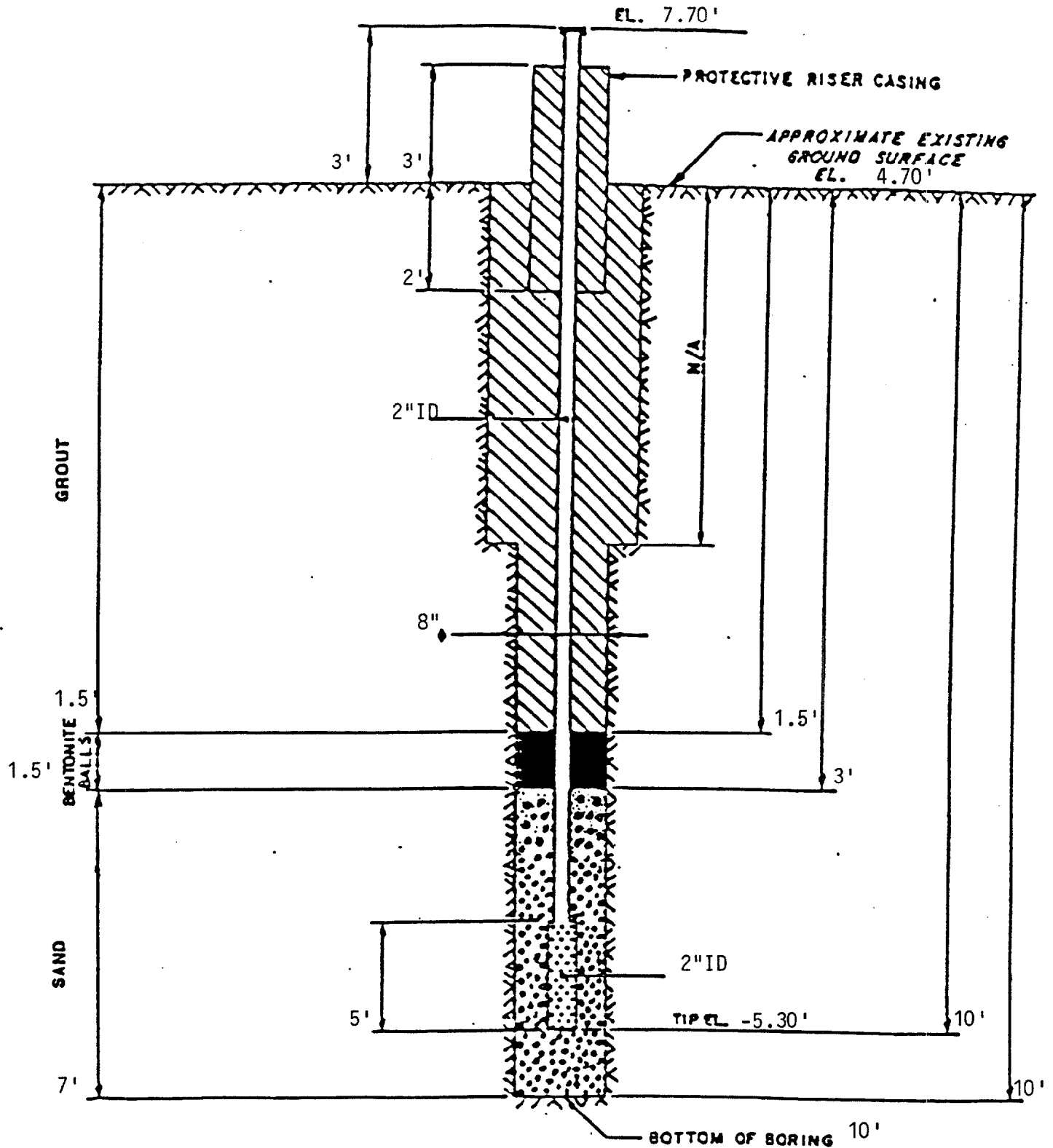
WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
REMARKS Well was developed 6/23/90. Water removed by centrifugal pump. Approximately
15 gallons water clear with some silt after 20 minutes was clear and silt free. Pump used
was a Briggs and Stratton 5 HP with a flow rate of 1 to 2 gpm.



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MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY G. Stephens DATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-1





INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Fellenheim Limestone #5	
BORING NUMBER: GW 5-2	COORDINATES: N/A	DATE: 6/22/90
ELEVATION: 7.50	GWL: Depth 2' Date/Time 6/22/90 - 14105	DATE STARTED: 6/22/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/22/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	Plot 5 VOA (3.0m) PES (3.0m) PES (3.0m)	N/A	N/A	2" Top Soil 110 L & S M	N/A	N/A	N/A	Time 1400 3ppm
2-4	N/A			Collitic Limestone Fill				
4-6				Collitic Limestone Fill				
6-8				Collitic Limestone Fill				
8-10				Collitic Limestone Fill				14130 3ppm
10-12				End of Logging				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin & Alex

NOTE: Ben-onic ge probe
used and used
to correlate

Blow counts N/A due to
communication difficulty
in Level "C"

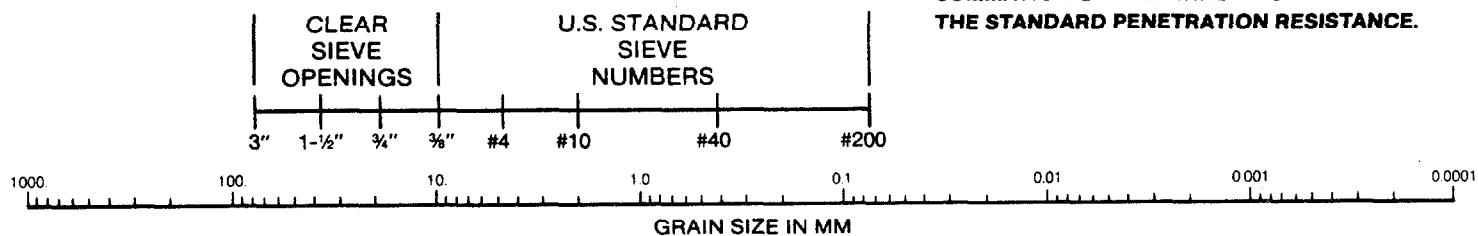
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-2
DATE OF INSTALLATION 6/22/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2'</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>8'</u>
TOTAL PERFORATED AREA <u>5'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		7.50	
GROUND SURFACE	0.0		4.50	
BOTTOM OF PROTECTIVE PIPE	2.0		3.00	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.5
	TOP	1.5	BOTTOM	3.0
	TOP	3.0	BOTTOM	10.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	5.0	BOTTOM	10.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-5.50	
GWL AFTER INSTALLATION	2.0		2.50	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Well developed and grouted 6/23/90. Water removed by centrifugal pump, approximately 10-15 gallons. Water changed from light grey to clear silt free. Split spoon rope broke during SPT, had to change ropes. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



INTERNATIONAL
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MONITOR WELL INSTALLATION SKETCH

Key West Remedial

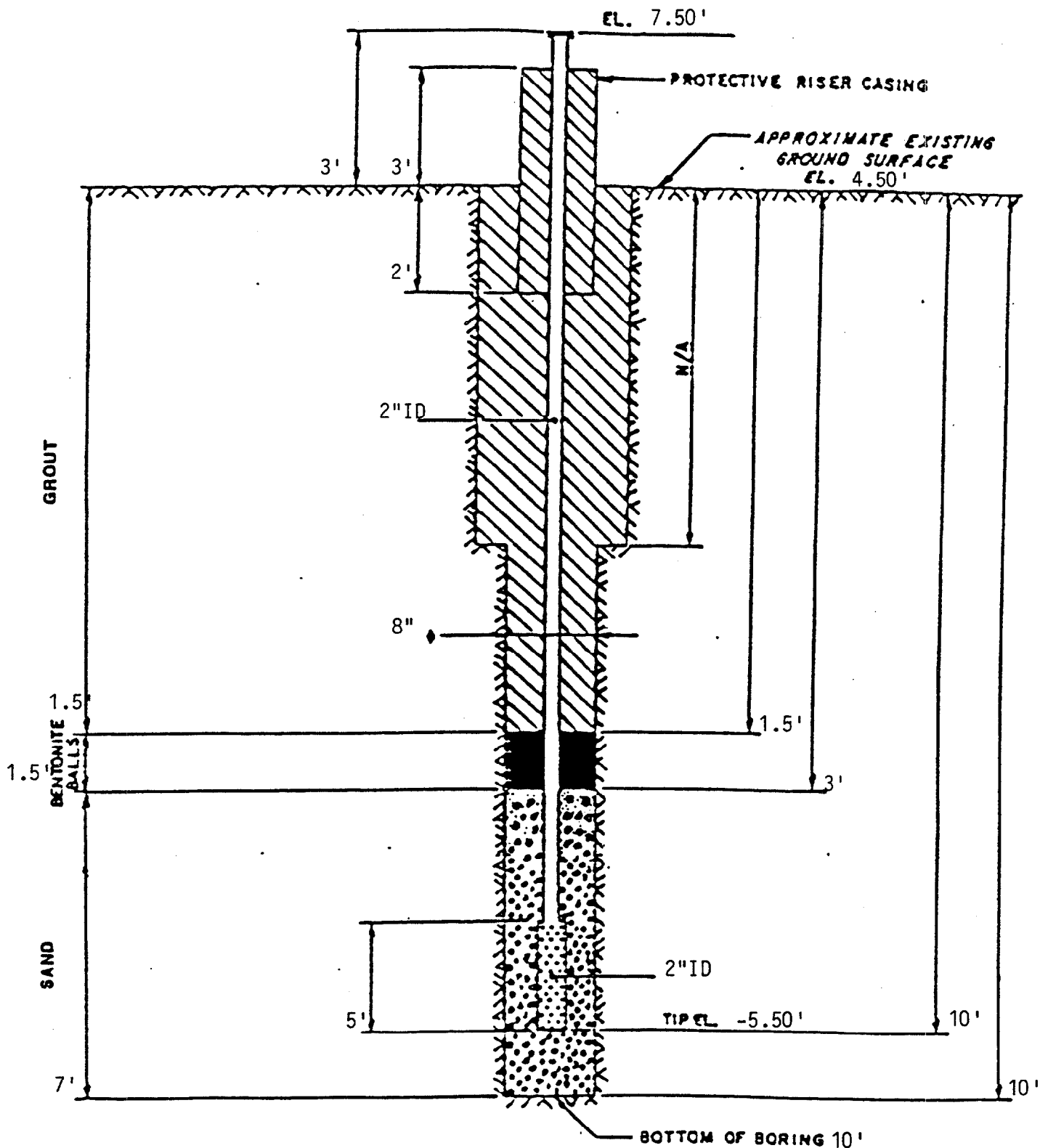
PROJECT NAME Investigation

INSTALLED BY G. Stephens DATE 6/22/90

PROJECT NO. 595392

CHECKED BY M. Hampton DATE 9/20/90

BORING NO. MW5-2



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site #5</u>		
BORING NUMBER: <u>mw F-3</u>	COORDINATES: <u>N/A</u>		DATE: <u>6/22/90</u>
ELEVATION: <u>7.47'</u>	GWL: Depth <u>2.5'</u>	Date/Time <u>6/22/90-12:00</u>	DATE STARTED: <u>6/22/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/22/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor Time (ppm)
0-2	Plot 6 VOA discrete PSS meas 21-	N/A	N/A	2" - Top Soil 10" - Limestone Fill, dark color 2" - Sand, rock 10" - Limestone Fill	PT NA	N/A	N/A	12:15 5ppm
2-4				Saturated limestone fill w/ some sand				21:25 5ppm
4-6				Saturated limestone fill				
6-8				Saturated limestone fill				
8-10				Saturated limestone fill				
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin, Tizzi, Alex, & Ed

Note: Bentonite pellets
 added and mixed
 to hydrate

Blow counts N/A due to
 communication difficulties in Level "C"

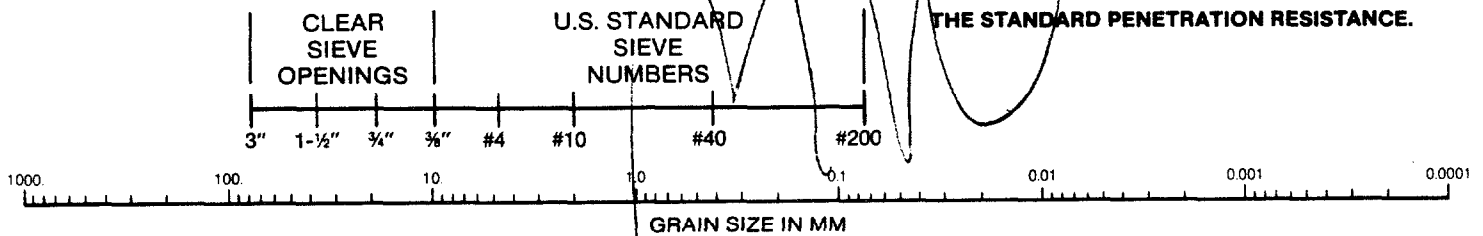
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-3
DATE OF INSTALLATION 6/22/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u> </u>
TOTAL PERFORATED AREA <u>5'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		7.47	
GROUND SURFACE	0.0		4.47	
BOTTOM OF PROTECTIVE PIPE	2.0		2.97	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.5
	TOP	1.5	BOTTOM	3.0
	TOP	3.0	BOTTOM	10.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	5.0	BOTTOM	10.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-5.53	
GWL AFTER INSTALLATION	2.5		1.97	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

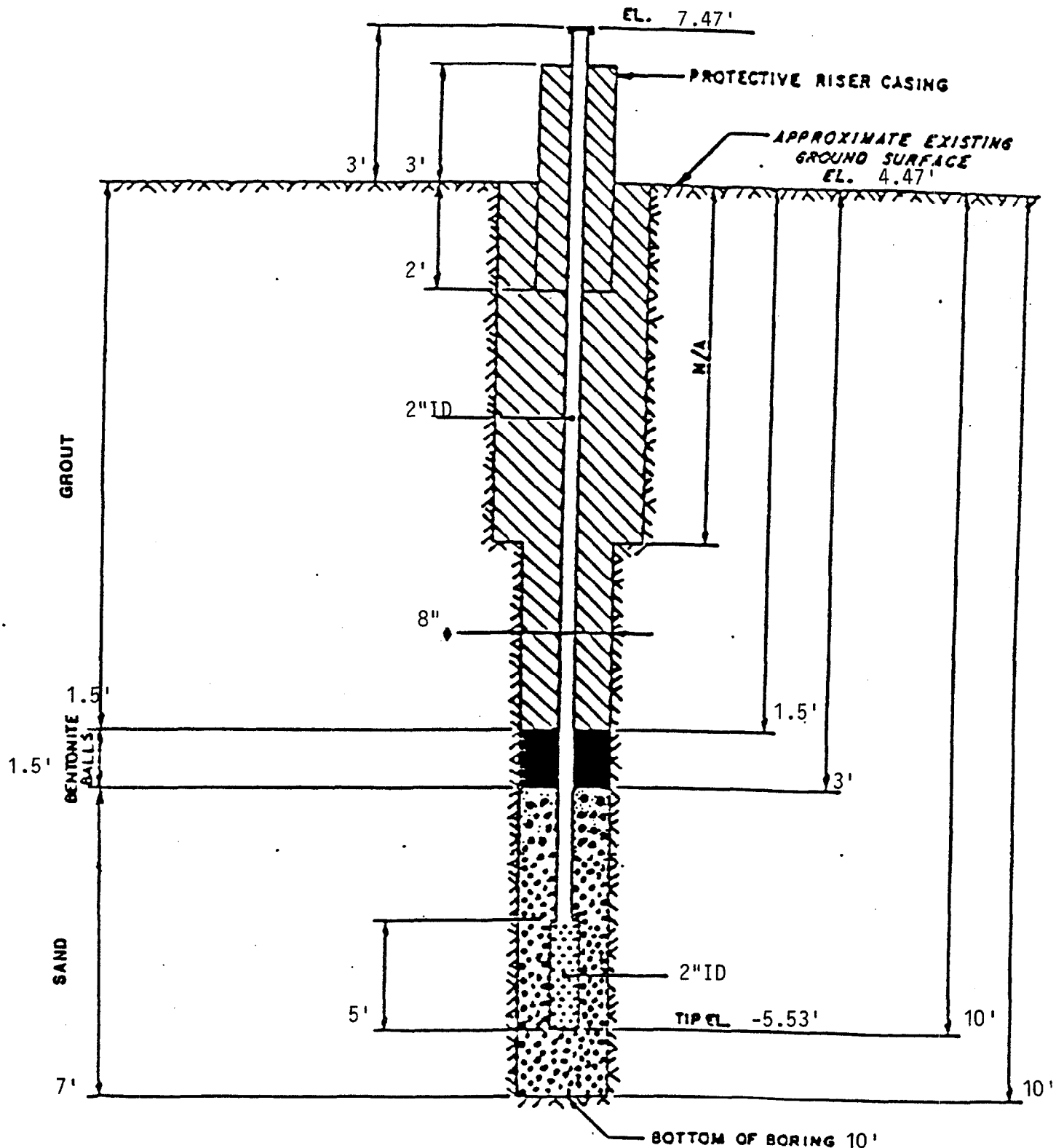
REMARKS Well developed 6/23/90. Water changed from dark silty color to clear silt free,
developed very quickly, pumped approximately 15 gallons using a 5 HP Briggs and Stratton
pump with a flow rate of 1 to 2 gpm.



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MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY G. Stephens DATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-3



Site 7
Fleming Key North Landfill

Well Construction Details
Fleming Key
North Landfill
Site 7
NAS Key West
Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 7-1	05/31/90	7.03	4.03	17	15	2.03 TO -12.97	0.010	16.0	0.5	0.5
MW 7-2	05/31/90	8.06	5.06	17	15	3.06 TO -11.94	0.010	19.0	0.5	0.5
MW 7-3	05/31/90	4.31	1.31	20	17.5	-1.19 TO -18.69	0.010	18.5	0.5	1.0
MW 7-4	05/30/90	10.05	7.05	18	15	4.05 TO -10.95	0.010	17.0	1.5	1.5
MW 7-5	05/30/90	9.12	7.12	18	15	4.12 TO -10.88	0.010	18.0	1.0	1.0
MW 7-6	05/31/90	7.15	4.15	17	15	2.15 TO -12.85	0.010	16.0	0.5	0.5

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>25392</u>	PROJECT NAME: <u>Key West Vertical Investigation Site # 7</u>	
BORING NUMBER: <u>NW7-1</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>
ELEVATION: <u>7.03'</u>	GWL: Depth <u>3.2'</u> Date/Time <u>5/30/90 2:45</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/30/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0	N/A	7, 12	N/A	0-1' Top Soil w/ Roots	PT	N/A	N/A	Time Organic Vapors (ppm)
2		10, 17		1-2' Unsaturated Crushed Limestone				11:05 1 ppm
		4, 3		2-3' Unsaturated Crushed Limestone	N/A			1 ppm
4		1, 1		3-4 Saturated Crushed Limestone				
		1, 1		4-5' 10" Saturated Crushed Limestone				2 ppm
6		2, 4		5' 10" - 6' Dark Saturated Limestone				1 ppm
		6, 4		6'-8' Dark Saturated Limestone				
8		5, 6		w/ Shell Fragments				11:15 3 ppm
		5, 4		8-10' Dark Saturated Limestone				2 ppm
10		2, 2		w/ Shell Fragments				4 ppm
		4, 2		10-12' Light Saturated				10 ppm
12		3, 2		oolitic limestone				
		6, 8		12-14' Light Saturated				
14		2, 11		oolitic limestone, slightly				
		31, 12		14-16' Light Saturated				
16	EP Tox / NW7-1	30, 30 43, 29 33, 20		oolitic Limestone, slightly				11:50 15 ppm
				16-18' Light Saturated				
18				oolitic limestone, slightly				Read: 11:00 am, hole w/ Hollow stem auger for installation of Well. EP Tox (Grav sample) Taken @ 11:50 End of Boring 17'

NOTES:

Drilling Contractor: Drilling Solutions
 Drilling Equipment: Ford F-700 mobile Drill
 Driller: Dick and Angelo

note: Bentonite pellets added @ 12:45 and allowed to hydrate
 Grouting and Well Development on 6/1/90

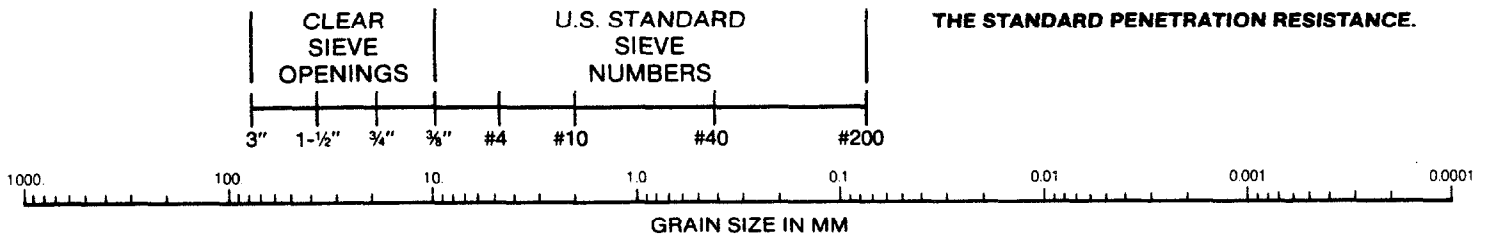
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



BOREHOLE DRILLING

DESCRIPTION

PROTECTION SYSTEM

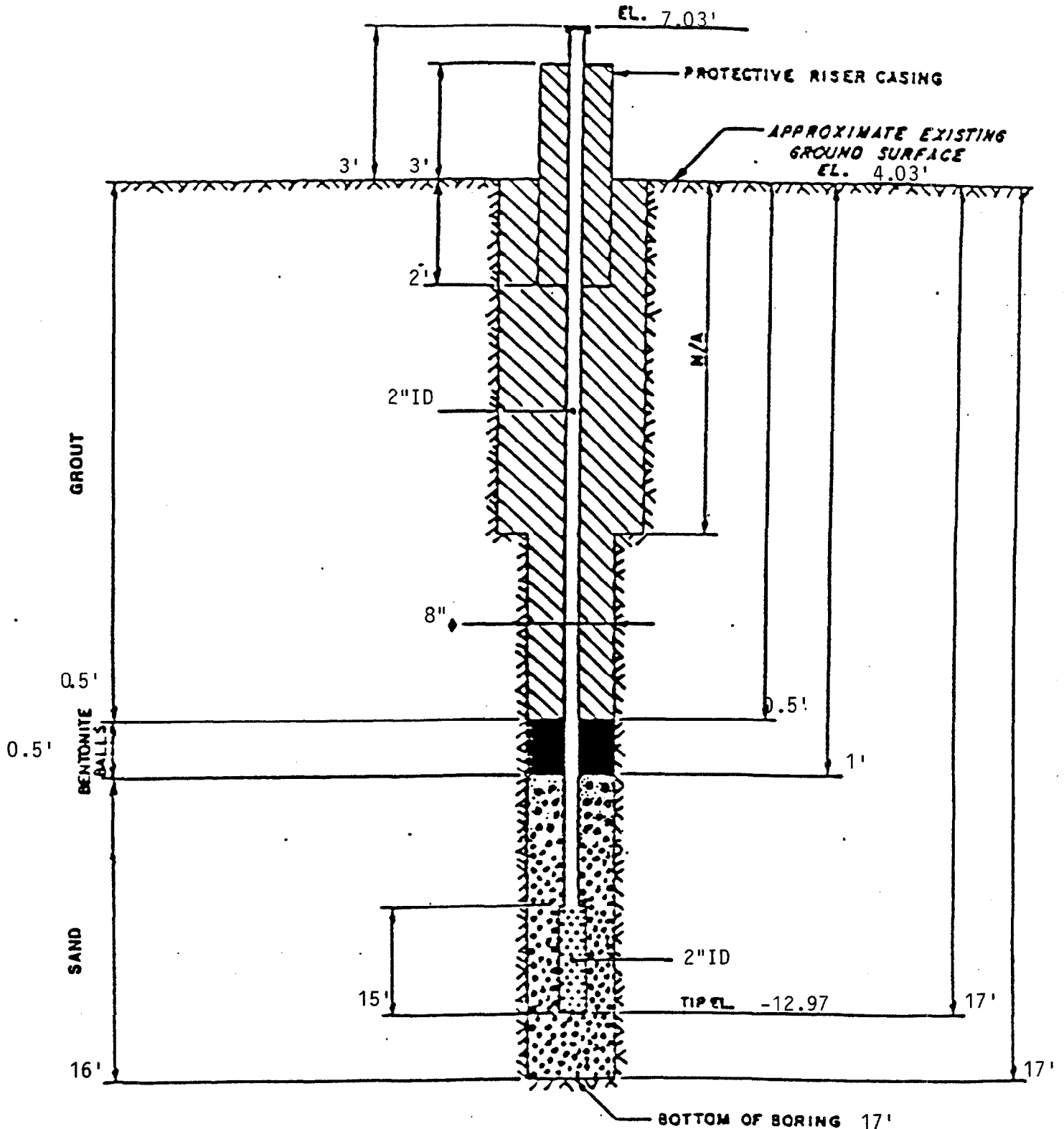
.. S THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
MARKS Well grouted and developed 6/1/90. Water removed by Centrifugal pump, 20 gallons.
water changed from grey silty to clear, sand free. Development completed at 13:15. Pump
used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



Key West Remedial

INSTALLED BY G. Stephens DATE 5/31/90

CHECKED BY M. Hampton DATE 9/21/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation, Site # 7</u>	
BORING NUMBER: <u>M07-2</u>		COORDINATES: <u>N/A</u>	DATE: <u>5/31/90</u>
ELEVATION: <u>8.06'</u>		GWL: Depth <u>4' 8"</u> Date/Time <u>5/31/90 13:55</u>	DATE STARTED: <u>5/20/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth Date/Time	DATE COMPLETED: <u>5/31/90</u>
DRILLING METHODS: <u>Hollow stem Auger / Split Spore</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
								Organic Time Vapor (ppm)
0-1	Top Soil	6, 12			PT	N/A	N/A	13:30 1 ppm
1-2	Crushed unsaturated Limestone	5, 4						
2-4	Crushed unsaturated Limestone	2, 2			N/A			1 ppm
4-4'8"	Crushed unsaturated Limestone	3, 3						
4'8"-6	Crushed saturated Limestone	7, 7						1 ppm
6-7	Crushed saturated Limestone	5, 4						
7-8	Grey Limestone w/ shells	6, 4						1 ppm
8-10	Grey Limestone w/ shell fragments	2, 2						2 ppm
10-10'4"	poorly sorted Sandy Limestone	13, 40						
10'4"-12	Saturated Crushed Limestone	51, 65						14:35 6 ppm
14-16	Saturated calc. Limestone							Burrowed to 16' to take sample for Gran. S. L.
16-18	Saturated calc. Limestone							Burrowed to 18' to take EP TOX
18-20	Saturated calc. Limestone	13, 38						15:05 2 ppm
		34, 33						End of Boring 20' well installation 1520-1540

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile drill
 Driller: Nick and Angela

note: bentonite pellets added @ 15:45 and allowed to hydrate
 Grouting and Well Installation 05/31/90

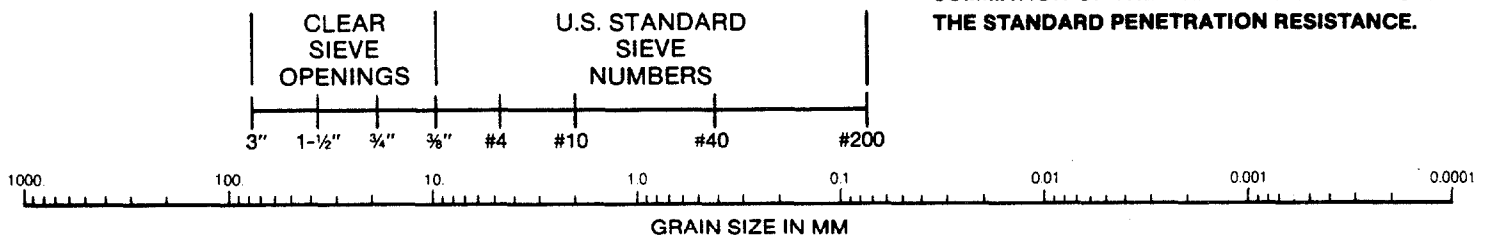
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW7-2
DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>5'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "O"</u>
TOTAL PERFORATED AREA <u>15'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		8.06	
GROUND SURFACE	0.0		5.06	
BOTTOM OF PROTECTIVE PIPE	2.0		3.06	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8 " Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.0	BOTTOM	0.5
	TOP	0.5	BOTTOM	1.0
	TOP	1.0	BOTTOM	20.0
PERFORATED SECTION	TOP	1.0	TOP	5.06
	TOP	N/A	TOP	4.56
	BOTTOM	N/A	TOP	4.06
	BOTTOM	N/A	TOP	4.06
PIEZOMETER TIP	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
BOTTOM OF BOREHOLE	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
GWL AFTER INSTALLATION	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06
	TOP	N/A	TOP	4.06

3 THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

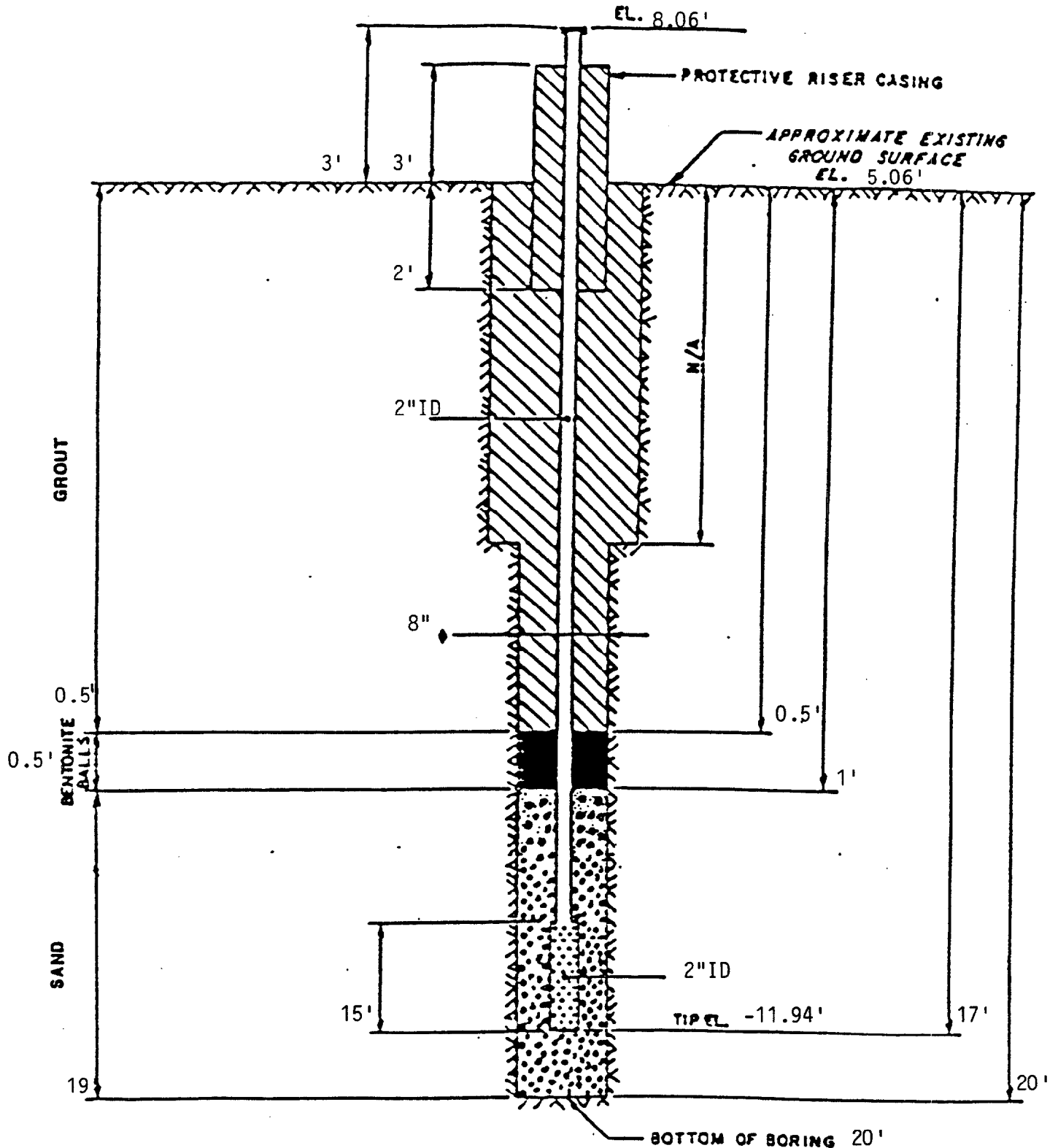
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Well grouted and developed 6/1/90. Water removed by centrifugal pump, approxi-
mately 20 gallons. Water changed from grey silty sand to clear sand free, development
completed 14:00. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.

MONITOR WELL INSTALLATION SKETCH

Key West Remedial

PROJECT NAME <u>Investigation</u>	INSTALLED BY <u>G. Stephens</u> DATE <u>5/31/90</u>
PROJECT NO. <u>595392</u>	CHECKED BY <u>M. Hampton</u> DATE <u>9/20/90</u>
BORING NO. <u>MW7-2</u>	





**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>	PROJECT NAME: <u>Key West Remedial Investigation # 7</u>		
BORING NUMBER: <u>MW 7-3</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/31/90</u>	
ELEVATION: <u>4.31 ft. MSL</u>	GWL: Depth <u>9"</u>	Date/Time <u>5/31/90-1715</u>	DATE STARTED: <u>5/31/90</u>
ENGINEER/GEOLOGIST: <u>S. Stephens</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/31/90</u>
DRILLING METHODS: <u>Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER 6"	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	8	N/A	9" Top Soil	PT	N/A	N/A	Organic 17:15
0-2		10		1' 3" Wet Crushed Lime Stone	N/A			1
		7						1
		7						1
		8						1
2-4		7		Wet Crushed Lime Stone				1
		2						1
		2						1
		3		Limestone w/ Shell fragments				1
		3		Oolites				1
		3						1
4-6		1						1
		2		6-7' Limestone w/ shell				
		2						10
		1		7-8' Silty Odorous				20
6-8		1		Lime Stone				20
		1		Silty Lime Stone (Grey)				100
		1		Same				100
		1		Rebar on hard				100
8-10		10						17:25 100
		25		Silty Lime Stone				Borehole 5
		34		w/ small Oolites				5
		41						5
14-16	✓	50						Fill 5
	Soil Boring MWD-3 E.P.	16		Oolitic limestone w/				17:50 5
		44		Shell fragments				5
		43						5
18-20	✓	36				✓	✓	5
				End of Boring	✓			Take Elevation

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Forg F-500 Mobile drill
 Driller: Jack and Angelo

NOTE: Bentonite pellets
 loaded and allowed
 to hydrate

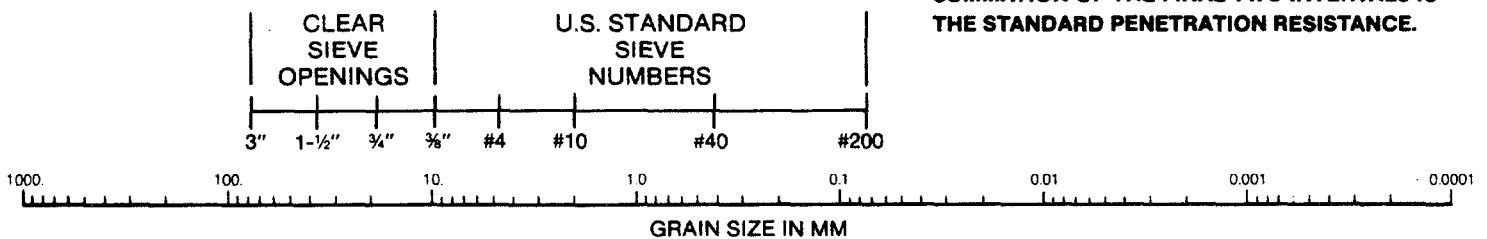
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/21/90
BORING NO. MW-3 DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5.5'</u>
TOTAL PERFORATED AREA <u>17.5'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	2.5'		4.31	
GROUND SURFACE	0.0		1.31	
BOTTOM OF PROTECTIVE PIPE	3.0		-1.19	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	1.5
	TOP	1.5	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	2.5	BOTTOM	20.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-18.69	
GWL AFTER INSTALLATION	0.8		0.5	

.. S THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

MARKS Developed and grouted well 6/1/90. Water removed by centrifugal pump, changed rapidly from light grey to clear sand free. Pumped approximately 25 gallons, completed by 18:15. A 2.5' extension with coupling was added to PVC to reach required height. Pump used was a 5 HP Briggs and Stratton with a 1 to 2 gpm flow rate.



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595-392	PROJECT NAME: Key West Remedial Investigation Site #7	
BORING NUMBER: MW 7-4	COORDINATES: N/A	DATE: 5/30/90
ELEVATION: 10.05	GWL: Depth 5' 9" Date/Time 5/30/90-15:10	DATE STARTED: 5/30/90
ENGINEER/GEOLOGIST: J. J. ...	Depth N/A Date/Time N/A	DATE COMPLETED: 6/1/90
DRILLING METHODS: Hollow Stem Auger, Split Spoon		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER 6" ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	5	N/A	1' Top Soil	PT	N/A	N/A	Time Organic Vapors (ppm)
0-2		13		1' Light Limestone fill	N/A	N/A	N/A	15:00 1
		9						
		4		2' Brown, poorly sorted Limestone fill				1
2-4		6						
		5						
		8		1' above				
		16		1' Light Limestone fill				2
4-6		15						
		19						
		5						
		5						
		4		1' Light Limestone fill				2
6-8		4						
		3		1 1/2' Brown Limestone fill				
		2						
8-10		5		6" Light Limestone fill				15:25 2
		34						
		11		Limestone oolitic				
		24		Bottom of Pit				Bottom of Pit 0
14-16	✓	63						
	56.1	24						
	126.10	30						
	144.4	33						
18-20	101	100/3	✓		✓	✓	✓	0
				End of Coring				15:30

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile drill
 Driller: Nicholas J. ...

NOTES: Bentonite pellets added
 and allowed to hydrate

Decon : Steam clean Auger, Spoons washed in Alcaox
 all placed on visquine, stored in labeled drum

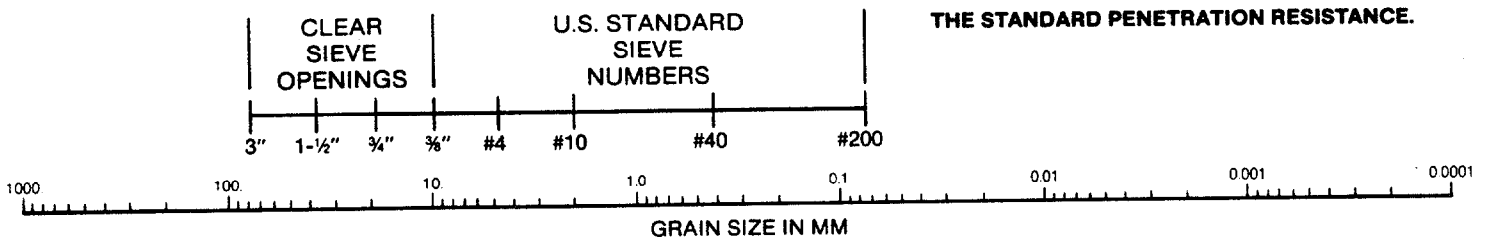
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 5/30/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/21/90
BORING NO. MW7-4 DATE OF INSTALLATION 5/30/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID(S) USED: <u>N/A</u>	CASING SIZE(S) USED: <u>N/A</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: _____
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>6'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		10.05	
GROUND SURFACE	0.0		7.05	
BOTTOM OF PROTECTIVE PIPE	3.0		5.05	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.5
	TOP	1.5	BOTTOM	3.0
	TOP	3.0	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	3.0	BOTTOM	18.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-12.95	
GWL AFTER INSTALLATION	5.9		0.75	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
REMARKS Well developed and grouted 6/1/90. Water removed by centrifugal pump, 20 gallons
Water changed from grey silty to clear sand free. Development complete at 14:45; extension
with coupling necessary on riser pipe and protective pipe to reach 3'. Pump was a 5 HP
Briggs and Stratton with a flow rate of 1 to 2 gpm.

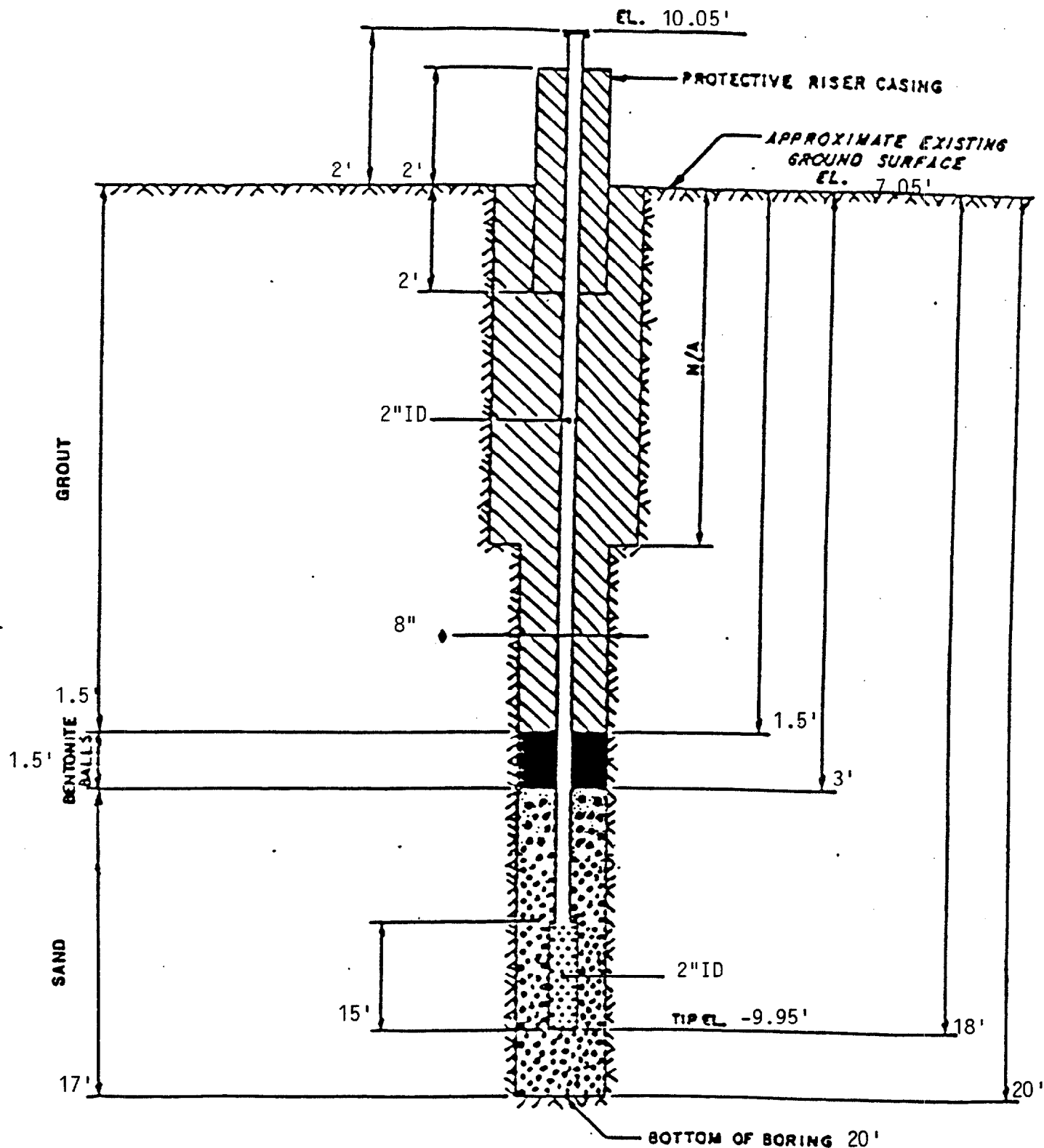


Key West Remedial

INSTALLED BY G. Stephens DATE 5/30/90

CHECKED BY M. Hampton DATE 9/21/90

DATE 3/21/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Regal Inspection Site 9</u>	
BORING NUMBER: <u>MW 7-5</u>		COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>
ELEVATION: <u>9.12</u>	GWL: Depth <u>5' 2"</u>	Date/Time <u>5/30/90 - 17:40</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>S. Stephens</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/1/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	7	N/A	0-1'- Top Soil	PT			Organic Time
0-2		10		1'-2'- Crushed Limestone fill w/ some silt	ML	102	102	17:30 1
2-4		8		Crushed Limestone fill w/ some silt				1
4-6		10		Crushed Limestone fill w/ some silt				1
6-8		10		Crushed Limestone fill w/ some silt				1
8-10		15		Crushed Limestone fill w/ some silt and Shell fragments				17:45 2
10-12		20		1.5' Light Limestone fill				Returned down to 5' depth
12-14		24		1.5' Dark, politic				6
14-16		18		Light, Silty Limestone fill w/ collars, silty clay over.				Returned down to 5' depth EPTOR
16-18		8						50
18-20		6						
		8						
		4		End of Boring				18:30

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F 700 mobile Drill
 Driller: Nick and Angelo

Note: Bentonite pellets
 added and allowed
 to hydrate

Decon: Auger steam cleaned on Visquine, Spoons washed
 in Alcanox
 Contaminated Material placed in labeled 55gal drum

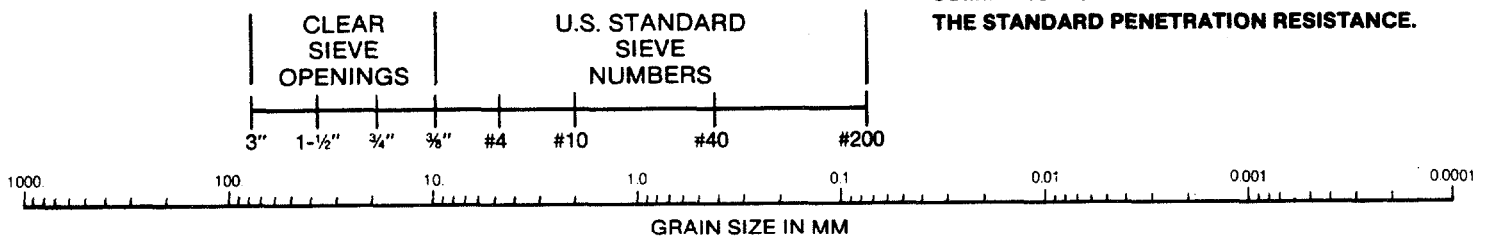
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 5/30/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/21/90
BORING NO. MW7-5 DATE OF INSTALLATION 5/30/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: _____
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>6'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	2.0		9.12	
GROUND SURFACE	0.0		7.12	
BOTTOM OF PROTECTIVE PIPE	3.0		4.12	
BOREHOLE FILL MATERIALS: GROUT <u>Type I Cement ASTM C150</u> BENTONITE <u>3/8" Pellets</u> SAND <u>20/30 Silica, ASTM C775</u> GRAVEL <u>N/A</u>	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	2.0
	TOP	2.0	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	3.0	BOTTOM	18.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-12.88	
GWL AFTER INSTALLATION	5.2		2.9	

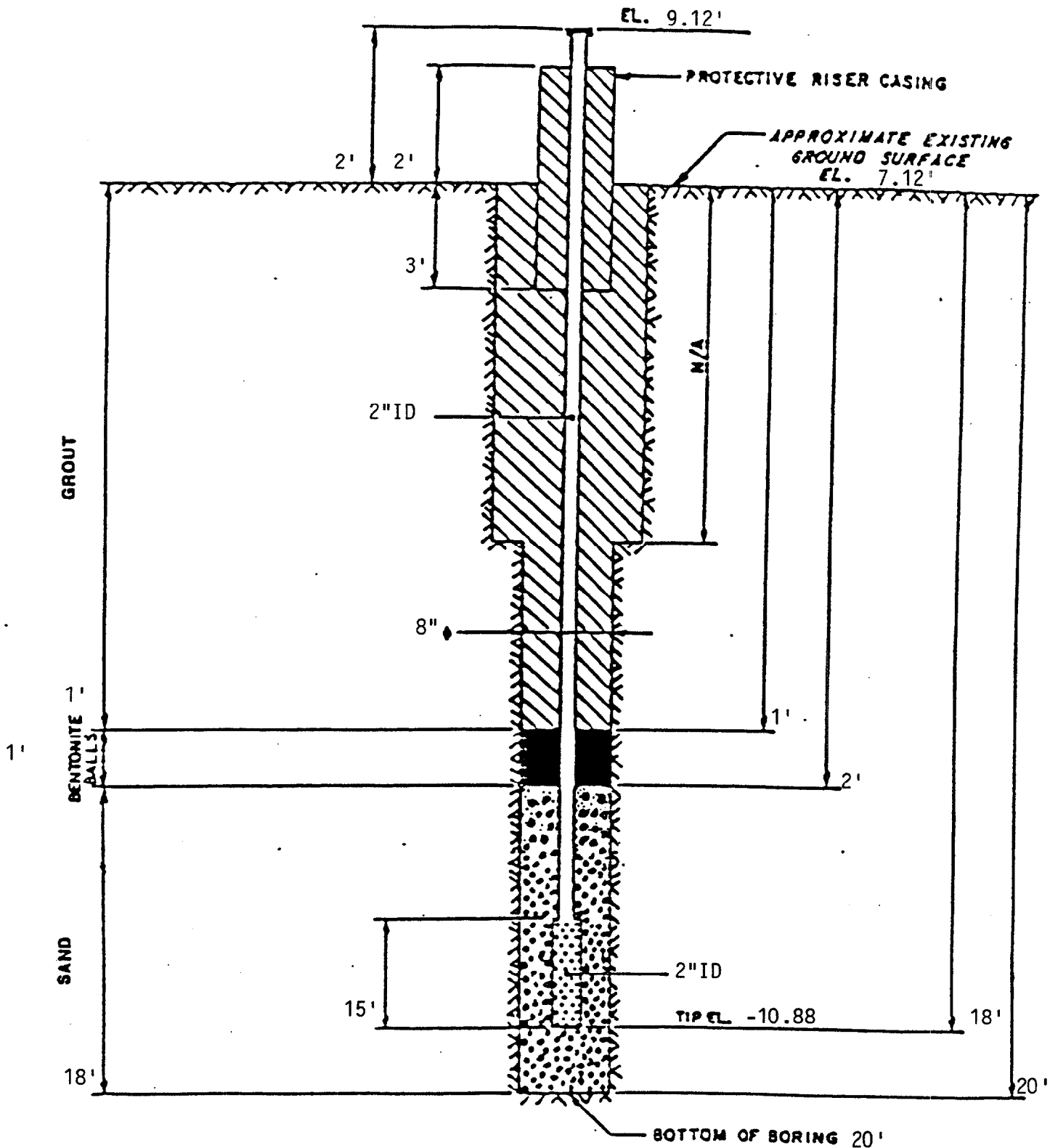
WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
REMARKS Wells developed and grouted 6/1/90. Water removed by centrifugal pump, approxi-
mately 25 gallons. Change in water from silty black to clear sand free. Development
completed 15:45, coupling with extension added to riser and protective pipe. Pump used was
a 5 Hp Briggs and Stratton, flow rate of 1 to 2 gpm.



MONITOR WELL INSTALLATION SKETCH

PROJECT NAME	Key West Remedial Investigation
PROJECT NO.	595392
BORING NO.	MW7-5

INSTALLED BY G.Stephens DATE 5/30/90
CHECKED BY M.Hampton DATE 9/21/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation</u>	
BORING NUMBER: <u>MW 9-6</u>		COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>
ELEVATION: <u>7.15</u>		GWL: Depth <u>3' 3"</u> Date/Time <u>5/30/90 - 19:47</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED:
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	5 10 8 9	N/A	0-1' - Top Soil 1'-2' - Dry Crushed Limestone	PT N/A	N/A	N/A	Time Organic Vapors (ppm) 19:45 1
2-4		6 13 10 6		2'-3' - Water Table 3'-4' Limestone crushed				19:47 1
4-6		6 7 6 6		Saturated crushed Limestone				1
6-8		6 5 5 6		6'-7' - Poor sorted sand 7'-8' - Limestone Oolitic				1
8-10		4 2 1 1		Silty Limestone well sorted				20:00 8
15-17	Cell Removal 15-16 16-17	5 64 62 57	✓	Saturated crushed Limestone Oolitic	✓	✓	✓	Burroughs down to EP Test 20:25 30
				(Shut down rig) Retrieve 2 1/2" PVC Riser				21:00 - 21:30
				End of Boring				22:15

NOTES:

 Drilling Contractor: Drilling Solution

 Drilling Equipment: Ford F-700 with drill

 Driller: Dick and Angelo

 Bentonite pellets added
and allowed to hydrate
2.5" PVC w/ tapping holes
to meet specifications.

 Method of Decon of Auger & Equipment: Steam cleaned Augers
on visquine
Placed in drums

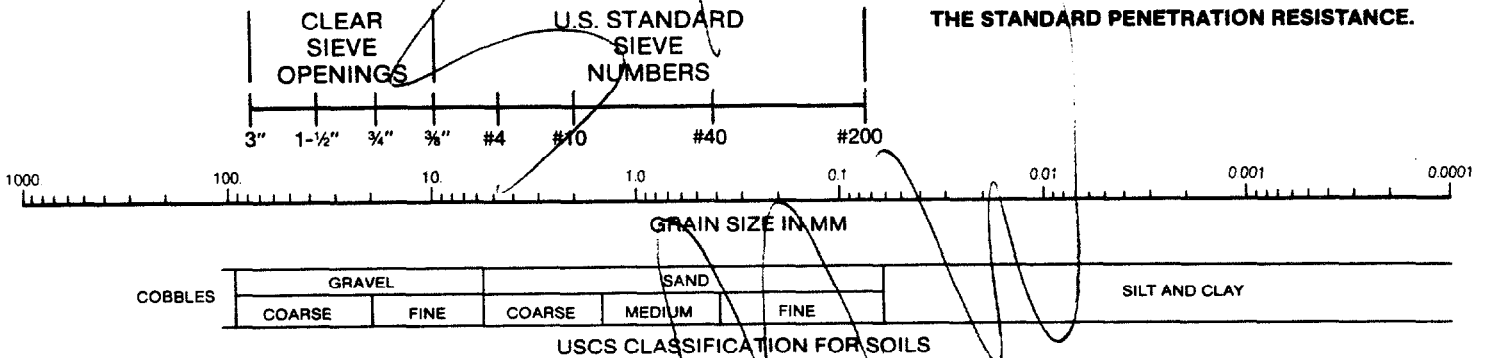
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. G. Stephens DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/21/90
BORING NO. MW7-6 DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID(S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		7.15	
GROUND SURFACE	0.0		4.15	
BOTTOM OF PROTECTIVE PIPE	2.0		2.15	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.0	TOP	4.15
	BOTTOM	0.5	BOTTOM	3.65
	TOP	0.5	TOP	3.65
	BOTTOM	1.0	BOTTOM	3.15
PERFORATED SECTION	TOP	1.0	TOP	3.15
	BOTTOM	17.0	BOTTOM	-12.85
	TOP	N/A	TOP	N/A
PIEZOMETER TIP	BOTTOM	N/A	BOTTOM	N/A
	TOP	2.0	TOP	2.15
BOTTOM OF BOREHOLE	BOTTOM	17.0	BOTTOM	-12.85
GWL AFTER INSTALLATION	TOP	3.25	TOP	0.90

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
REMARKS Wells developed and grouted 6/1/90. Water removed by centrifugal pump, approxi-
mately 25 gallons. Water changed from silty black to clear sand free, development complete
17:00. Pump used was a 5 HP Briggs and Stratton, flow rate of 1 to 2 gpm.



INTERNATIONAL
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MONITOR WELL INSTALLATION SKETCH

Key West Remedial

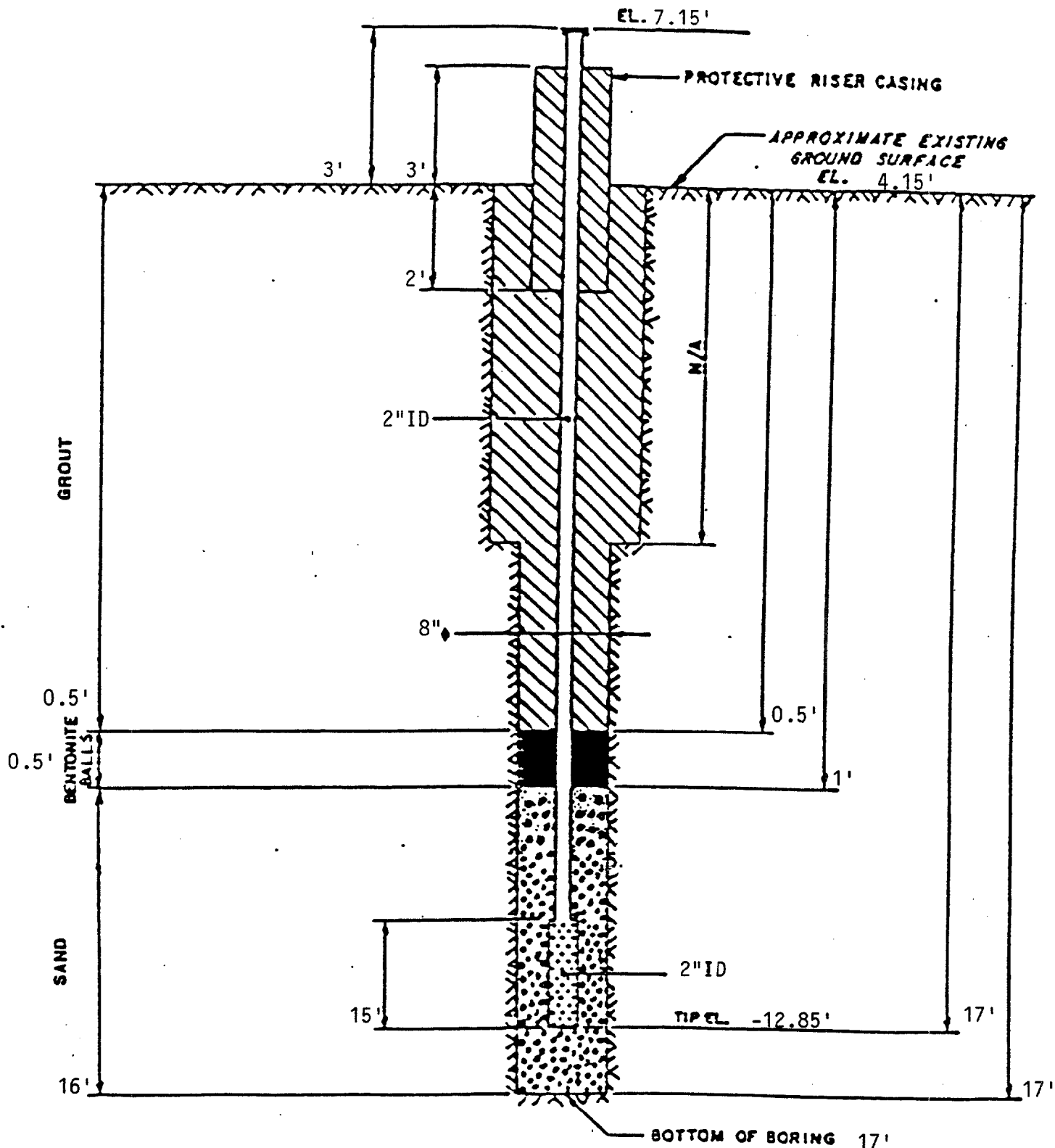
PROJECT NAME Investigation

INSTALLED BY G. Stephens DATE 5/31/90

PROJECT NO. 595392

CHECKED BY M. Hampton DATE 9/21/90

BORING NO. MW7-6



Site 8
Fleming Key South Landfill

Well Construction Details
Fleming Key
South Landfill
Site 8
NAS Key West
Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 8-1	05/30/90	13.56	10.56	18.0	15	7.56 TO -7.44	0.010	18.0	1.0	1.0
MW 8-2	05/31/90	5.64	2.64	17.0	15	0.64 TO -14.36	0.010	19.0	0.5	0.5
MW 8-3	05/31/90	10.72	7.72	18.5	14	3.22 TO -10.78	0.010	17.0	0.5	2.5
MW 8-4	06/11/90	12.50	9.50	25.0	20	4.50 TO -15.50	0.010	22.0	1.5	1.5
MW 8-5	06/11/90	9.05	6.05	18.5	15	3.05 TO -12.45	0.010	17.5	0.5	2.0
MW 8-6	06/11/90	9.36	6.36	18.0	15	3.36 TO -11.64	0.010	18.0	1.0	1.0
MW-16R	06/21/90	8.09	5.09	18.0	15	2.09 TO -12.91	0.010	18.0	1.0	1.0

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation Site #8</u>	
BORING NUMBER: <u>MW 8-1</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>
ELEVATION: <u>9.4</u>	GWL: Depth <u>5.5'</u> Date/Time <u>5/30/90 - 16:05</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/30/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>1</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	7	N/A	Limestone Fill, dry Gravel to sand size	N/A	N/A	N/A	Organic Time Vaper (ppm) 16:05
2-4		6		Limestone Fill, dry Clay				
4-6		20		Limestone Fill Plastic + metal Wet @ 5.5' product odor, black liquid				410 ppm 5.5'
6-8		2		Spoon empty product odor				
8-10		7		Limestone Fill Gravel to sand size Plastic + glass product odor, black liquid				
10-12		6		Limestone Fill Gravel to sand size product odor, black liquid				5.5'
12-14		1		Spoon empty product odor				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

NOTE: Bentonite pellets
 added and allowed
 to hydrate

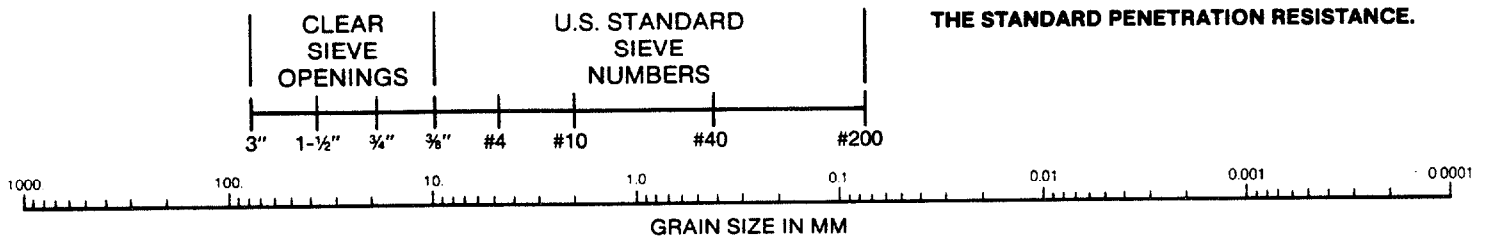
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation - Site #7	
BORING NUMBER: MW 8-1	COORDINATES: N/A	DATE: 5/30/90
ELEVATION: 9.4	GWL: Depth 5.5	Date/Time 5/30/90/12:05
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A	Date/Time N/A
DRILLING METHODS: Hollow Stem Auger, Split Spoon		PAGE 2 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	N/A	1	N/A	14'-15'5" - Limestone fill, gravel size	N/A	N/A	N/A	Time
		2		15'5"-16' - Lime mud gray/white				Organic vapor (ppm)
		1		Limestone fill and mud				3.0 ppm OVA
16-18		2		Glass				
		2		Product odor				
		1		Limestone fill				
		2		Little lime mud, shell				
18-20		5		fragments visible				
		6						
		4		Limestone fill and mud				
		9		Glass				
20-22	✓	7						
	3SF	5		22'-23' Limestone fill				OVA
	1	6		Glass fragments				
	E.P.	5		22.5' - approx. divide between				16145
22-24	TOX	5		land fill + base				3.0 ppm
		5		23'-24' Lime rock, white				
		5						
24-26		5		Lime rock, white				
		4						
				End of Boring				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin & Alex

NOTE: Bentonite pellets
 added and allowed
 to hydrate

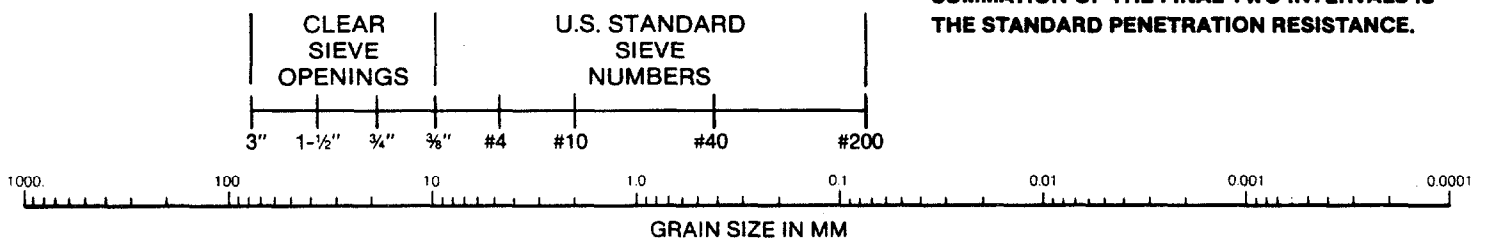
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 5/30/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-1 DATE OF INSTALLATION 5/30/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>6'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete Pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		13.56	
GROUND SURFACE	0.0		10.56	
BOTTOM OF PROTECTIVE PIPE	-1.5		9.06	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	2.0
	TOP	2.0	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	3.0	BOTTOM	18.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-9.44	
GWL AFTER INSTALLATION	10.0		0.56	

IS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

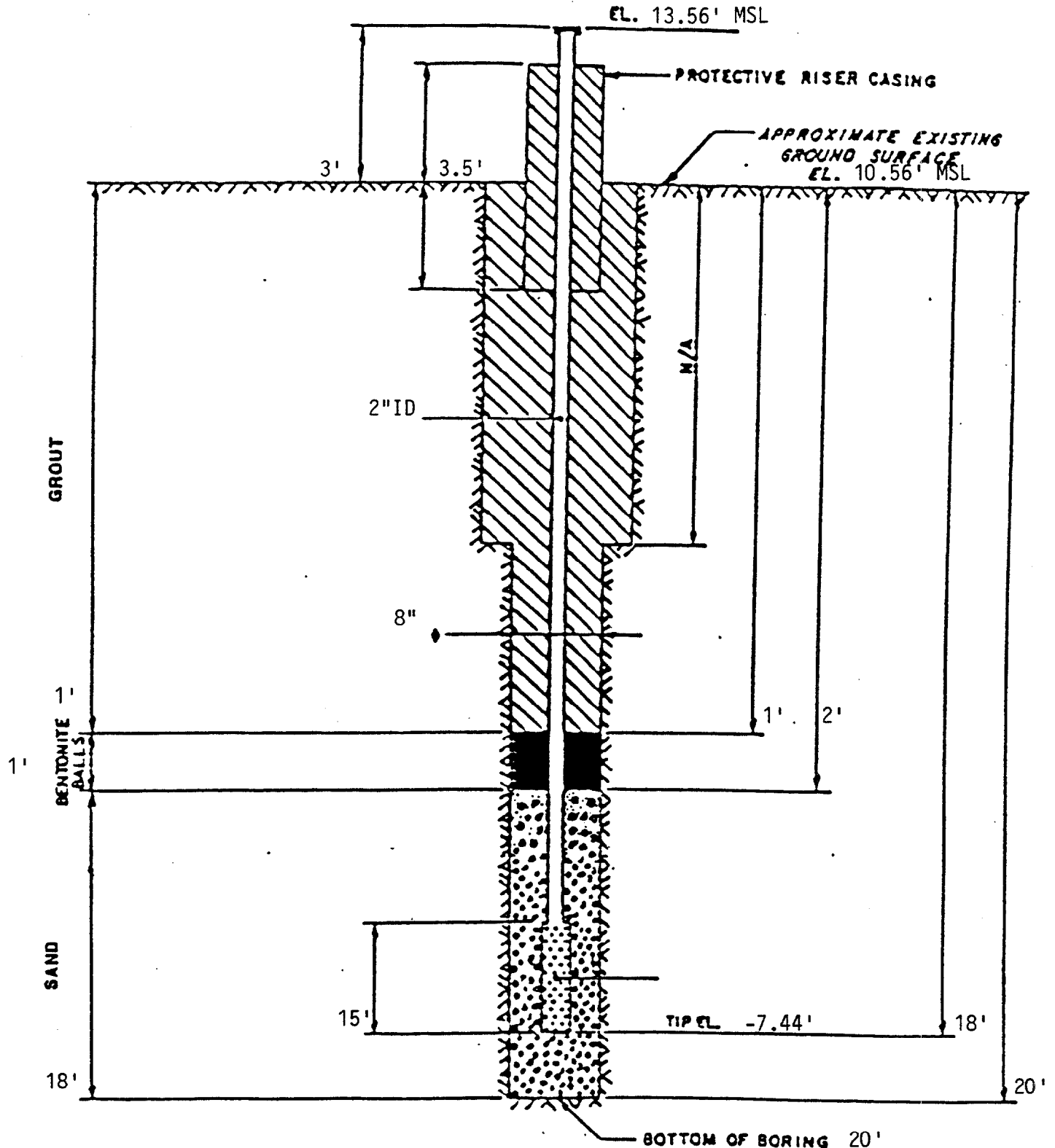
NO ☒

MARKS Well developed and grouted 6/22/90. Tape measure deconed before and after use,
2'X2'X6" thick pad installed. Produced clear sand free water after pumping 15 gallons.
Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY K. Dorsey DATE 5/30/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-1 Added 2½" screen 6/7/90 W.T. ~ 10'
BIs 6/7/90 1140





INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation Site # 8	
BORING NUMBER: mw 8-2	COORDINATES: N/A	DATE: 5/31/90
ELEVATION: 5.64	GWL: Depth 5'5" Date/Time 5/31/90-15:10	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A Date/Time	DATE COMPLETED: 5/31/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWSON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2		4 W6	N/A	Limestone Fill, gray Gravel to sand size	PT N/A	N/A	N/A	Organic Time Vapor (ppm) 1500 2ppm OVA Background
2-4		6 W6		Limestone Fill, gray Gravel to sand size				
4-6		11 15 11 8		4.5'- Limestone Fill, gray 5'- 5.5'- Apparent water level 5.5'- 6'- Lime mud, saturated				
6-8		7 7 7		Lime mud, saturated				
8-10		4 4 4		Lime mud, saturated				
10-12		4 4 4		Lime mud, saturated				
12-14		4 4 4		Lime mud, saturated				
		7						

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

NOTE: Bentonite pellets
added and allowed
to hydrate

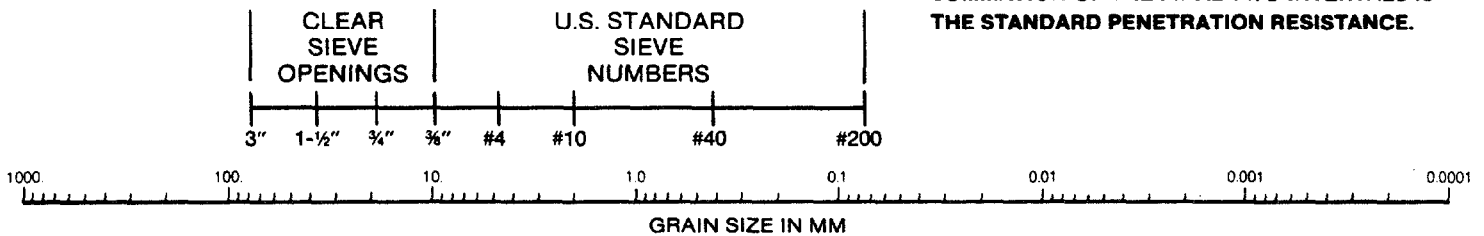
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
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COBBLES	GRAVEL		SAND			SILT AND CLAY
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USCS CLASSIFICATION FOR SOILS

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CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Survey		
BORING NUMBER: MW 8-2	COORDINATES: N/A	DATE: 5/31/90	
ELEVATION: 5.64	GWL: Depth 5.5'	Date/Time 5/31/90 - 15:10	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A	Date/Time N/A	DATE COMPLETED: 5/31/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon			PAGE 2 OF 2

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	N/A	10	N/A	Lime mud, saturated	N/A	N/A	N/A	Organic Time
16-18	↓	10	✓	Limestone Fill, gray Gravel to mud				15:10
18-20	↓	10	✓	18'-20' - Limestone Fill, gray				
	↓	9	✓	19'-20' - White Lime Rock				15:35 2.5 ppm CVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin & Alex

NOTE: Bentonite pellets
added and allowed
to hydrate

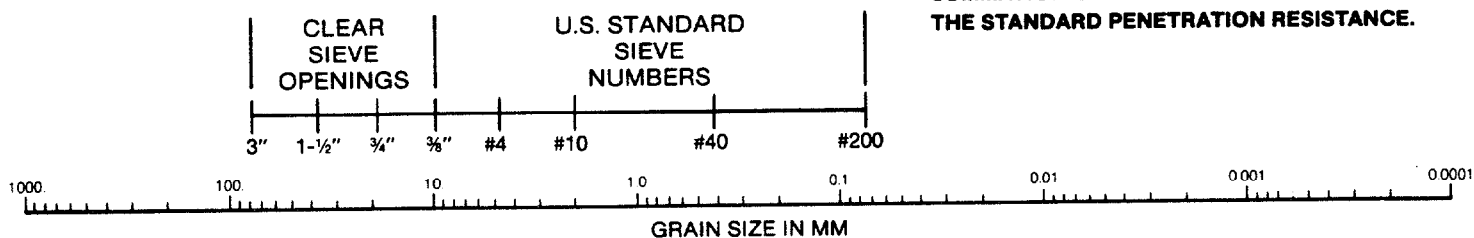
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-2
DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		5.64	
GROUND SURFACE	0.0		2.64	
BOTTOM OF PROTECTIVE PIPE	1.5		1.14	
BOREHOLE FILL MATERIALS:				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5	TOP 2.64	BOTTOM 2.14
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 2.14	BOTTOM 1.64
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 20.0	TOP 1.64	BOTTOM 17.36
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 2.0	BOTTOM 17.0	TOP 0.64	BOTTOM 14.36
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-17.36	
GWL AFTER INSTALLATION	2.0		0.64	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

MARKS Well developed 6/22/90. Measuring tape deconed before and after use.

2'X2'X6" pad installed. Produced clean sand free water after 25 gallons. Pump used was
a 5 HP Briggs and Stratton, flow rate of 1 to 2 gpm.

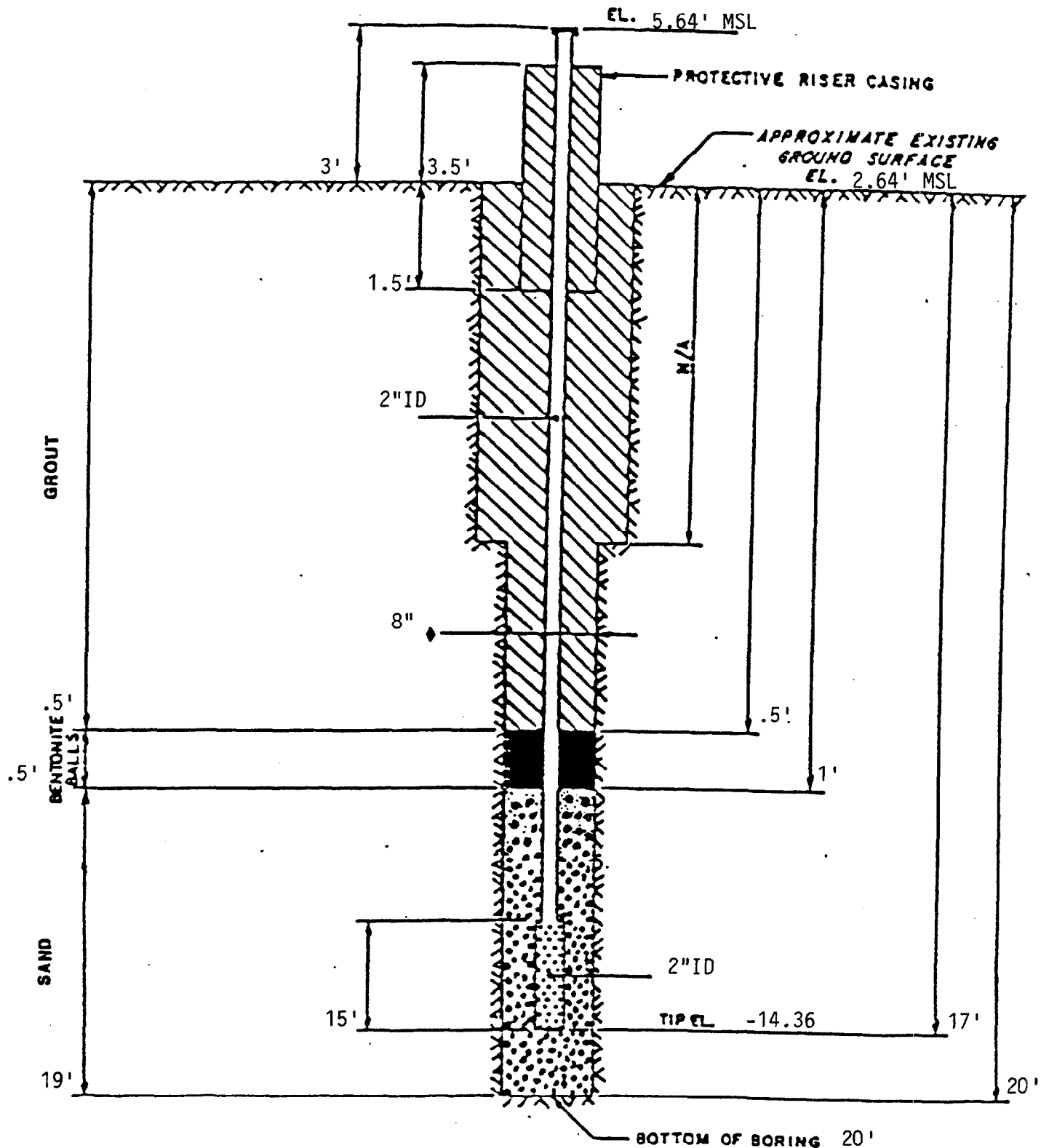


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MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Key West Remedial Investigation
PROJECT NO. 595392
BORING NO. MW8-2

INSTALLED BY K. Dorsey DATE 5/31/90
CHECKED BY M. Hampton DATE 9/20/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Redwood Forest Park, Redwood City, CA</u>		
BORING NUMBER: <u>mw-8-3</u>	COORDINATES: <u>37° 45' 00" N 122° 25' 00" W</u>		DATE: <u>5/31/90</u>
ELEVATION: <u>12.72</u>	GWL: Depth <u>5.5'</u>	Date/Time <u>5/31/90-16:15</u>	DATE STARTED: <u>5/31/90</u>
ENGINEER/GEOLOGIST: <u>Kevin + Alex</u>	Depth <u>14'</u>	Date/Time <u>5/31/90</u>	DATE COMPLETED: <u>5/31/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (10")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	5	N/A	Limestone fill, dry	PT	N/A	N/A	Original
		6		Gravel to sand size	N/A			Time
0-2		10	✓	Limestone fill, dry				16:15
		15		Gravel to sand size				4ppm
		14						CVA
2-4		9		Limestone fill, wet				background
		9		Gravel to sand size				
		12		Limestone fill, wet				
4-6		9		Gravel to sand size				
		10		Limestone fill, wet				
		10		Gravel to sand size				
6-8		5		Limestone fill, wet				
		5		Mostly sand size				
		5		Little gravel size				
8-10		2		Limestone fill, wet				
		1		Mostly sand size				
		1		Little gravel size				
10-12		2		Limestone fill, wet				
		1		Mostly sand size				
		3		Little gravel size				
12-14		1	✓		✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

Note: Bentonite pellets
 added and allowed
 to hydrate

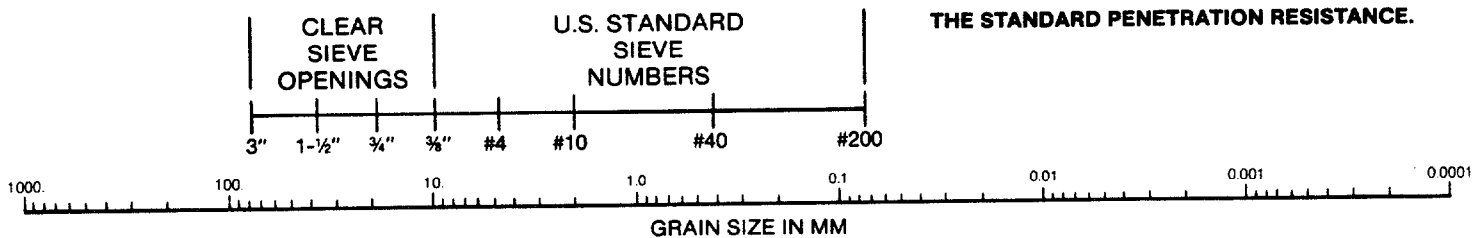
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Area 6	
BORING NUMBER: MW-8-3	COORDINATES: -	DATE: 5-3-90
ELEVATION: 10.42	GWL: Depth 5.0' Date/Time 5/3/90-16:15	DATE STARTED: 5/3/90
ENGINEER/GEOLOGIST: J. Dorsey	Depth - Date/Time -	DATE COMPLETED: 5/3/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE 2 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	N/A	2	N/A	Limestone fill, wet mostly sand size little gravel size	FT N/A	N/A	N/A	Organic Time
16-18	✓ MUSF3	12	✓	Limestone fill, wet Limestone mud, wet Gravel to sand size, dry				4 p.m. OVA background
18-20	EP TSX	14	✓	18'-19.5' Limestone fill, wet limestone mud, wet gray 19.5'-20' - Limerock, white				17:00
				End of Boring				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin & Alex

NOTE: Bentonite pellets
added and allowed
to hydrate

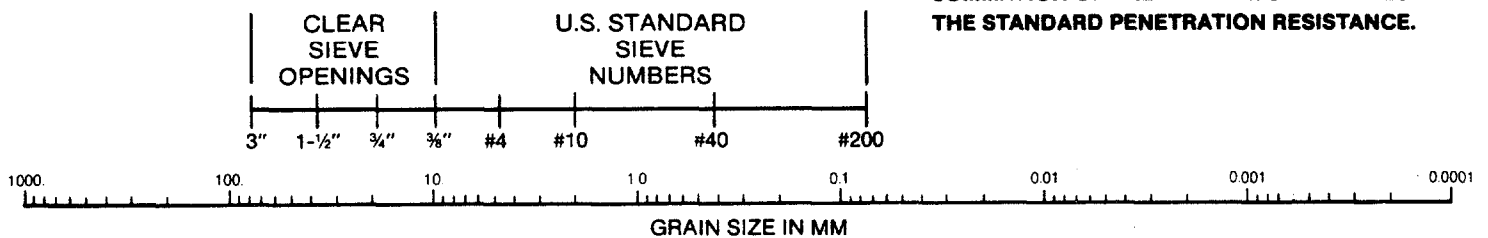
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation
PROJECT NO. 595392
BORING NO. MW8-3

FIELD ENG./GEO. K. Dorsey

DATE 5/31/90

CHECKED BY M. Hampton

DATE 9/20/90

DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u>and D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>9'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "O"</u>
TOTAL PERFORATED AREA <u>14'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		10.72	
GROUND SURFACE	0.0		7.72	
BOTTOM OF PROTECTIVE PIPE	1.5		6.22	
BOREHOLE FILL MATERIALS:				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 2.5	TOP 7.72	BOTTOM 5.22
BENTONITE 3/8" Pellets	TOP 2.5	BOTTOM 3.0	TOP 5.22	BOTTOM 4.72
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 20.0	TOP 4.72	BOTTOM -12.28
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 4.5	BOTTOM 18.5	TOP 3.22	BOTTOM -10.78
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-12.28	
GWL AFTER INSTALLATION	7.0		.70 6/7/90	

5 THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

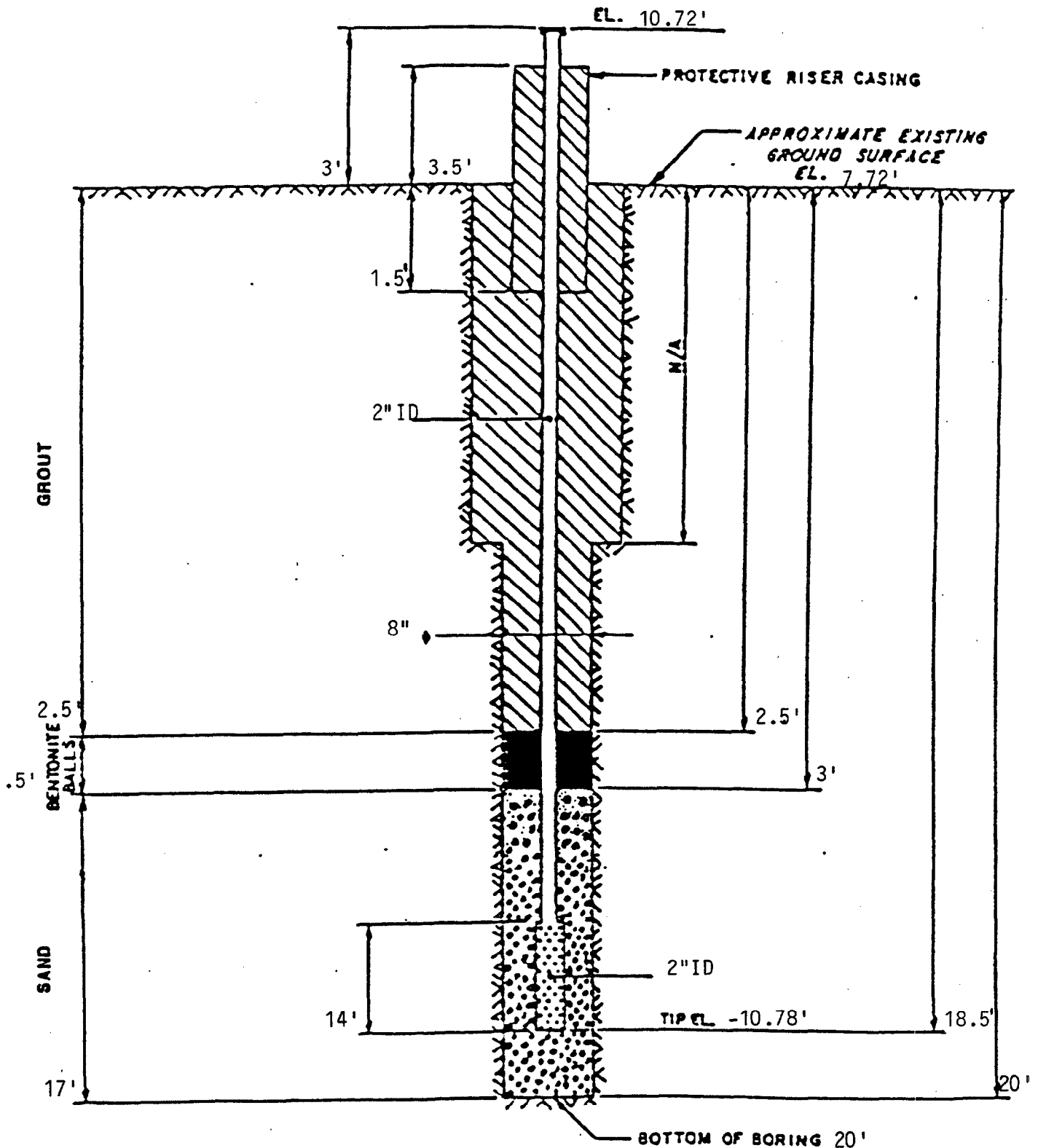
NO ☒

REMARKS Well developed 5/31/90 for ~ 25 min, about 20 gallons till clear and sand free. 2'X2'X6" pad installed and measuring tape deconed before and after use. Pump used was a 5 HP Briggs and Stratton, flow rate of 1 to 2 gpm.



Key West Remedial

INSTALLED BY K. Dorsey DATE 5/31/90
 CHECKED BY M. Hampton DATE 9/10/90
 W.L. ~ 7' 6/7/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site 8</u>		
BORING NUMBER: <u>MW 8-4</u>	COORDINATES: <u>N/A</u>		DATE: <u>6/1/90</u>
ELEVATION: <u>12.5'</u>	GWL: Depth <u>5'</u>	Date/Time <u>6/1/90 - 10:25</u>	DATE STARTED: <u>6/1/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/1/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>2</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	5 6 9 10	N/A	Limestone fill Gravel to sand size Dry	N/A	N/A	N/A	Organic Time 10:25 0ppm
2-4		3 4 11 10		Limestone fill Dry Asphalt, metal, plastic				
4-6		8 4 8 12		Limestone fill Wood, plastic, glass Damp @ 5'				0.5ppm
6-8		14 20 16 14		Limestone fill Glass				
8-10		12 8 10 10		Limestone fill Glass, metal Wet @ 9.5'				
10-12		6 5 6 6		Limestone fill Wet Glass				
12-14		5 8 6 7		Limestone fill Wet Limestone mud 12.5'-14'				1.0ppm
14-15	✓	4 4	✓		✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin & Alex

NOTE: Bentonite pellets
 used and allowed
 to hydrate

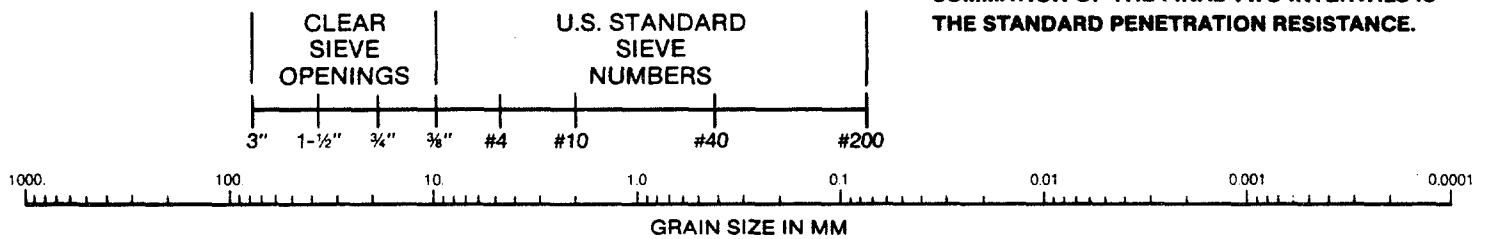
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595-392</u>	PROJECT NAME: <u>Key West Remedial Investigation Site #8</u>	
BORING NUMBER: <u>MW 8-4</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/1/90</u>
ELEVATION: <u>12.5</u>	GWL: Depth <u>5'</u> Date/Time <u>6/1/90-10:25</u>	DATE STARTED: <u>6/1/90</u>
ENGINEER/GEOLOGIST: <u>R. Dorsey</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/1/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>2</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	N/A	1	N/A	Limestone fill	N/A	N/A	N/A	Time
		1		Limestone mud				
		1		Limestone Fill				
		2		Wet				1 OVA
16-18		1		Gravel to medium size				
		2		Limestone Fill				
		2		Wet				
18-20		7		mud 18.5' to 20'				
		12						
		2		Limestone Fill				
		13		Wet				
20-22		7		Gravel mixed w/mud				
		9						
		5		Limestone Fill				
		4		Wet				
22-24		7		Gravel mixed w/mud				
		20						
	MWSE 4	30		Limestone Fill				
	EP			Possibly rock				1100 1 OVA
24-26	70X			@ 24.5' to 25' Refusal	✓	✓	✓	
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

NOTE: Bentonite pellets
 added and allowed
 to hydrate

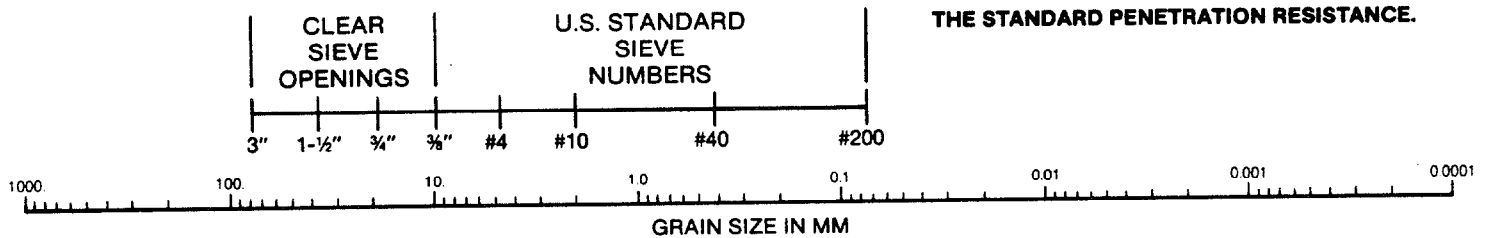
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/21/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-4
DATE OF INSTALLATION 6/11/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: _____
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>8'</u>
TOTAL PERFORATED AREA <u>20'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete Pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		12.50	
GROUND SURFACE	0.0		9.50	
BOTTOM OF PROTECTIVE PIPE	2.0		7.50	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP 0.0	BOTTOM 1.5	TOP 9.50	BOTTOM 8.00
	TOP 1.5	BOTTOM 3.0	TOP 8.00	BOTTOM 6.50
	TOP 3.0	BOTTOM 25.0	TOP 6.50	BOTTOM -15.50
	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 5.0	BOTTOM 25.0	TOP 4.50	BOTTOM -15.50
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	25.0		-15.50	
GWL AFTER INSTALLATION	5.66		3.84	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

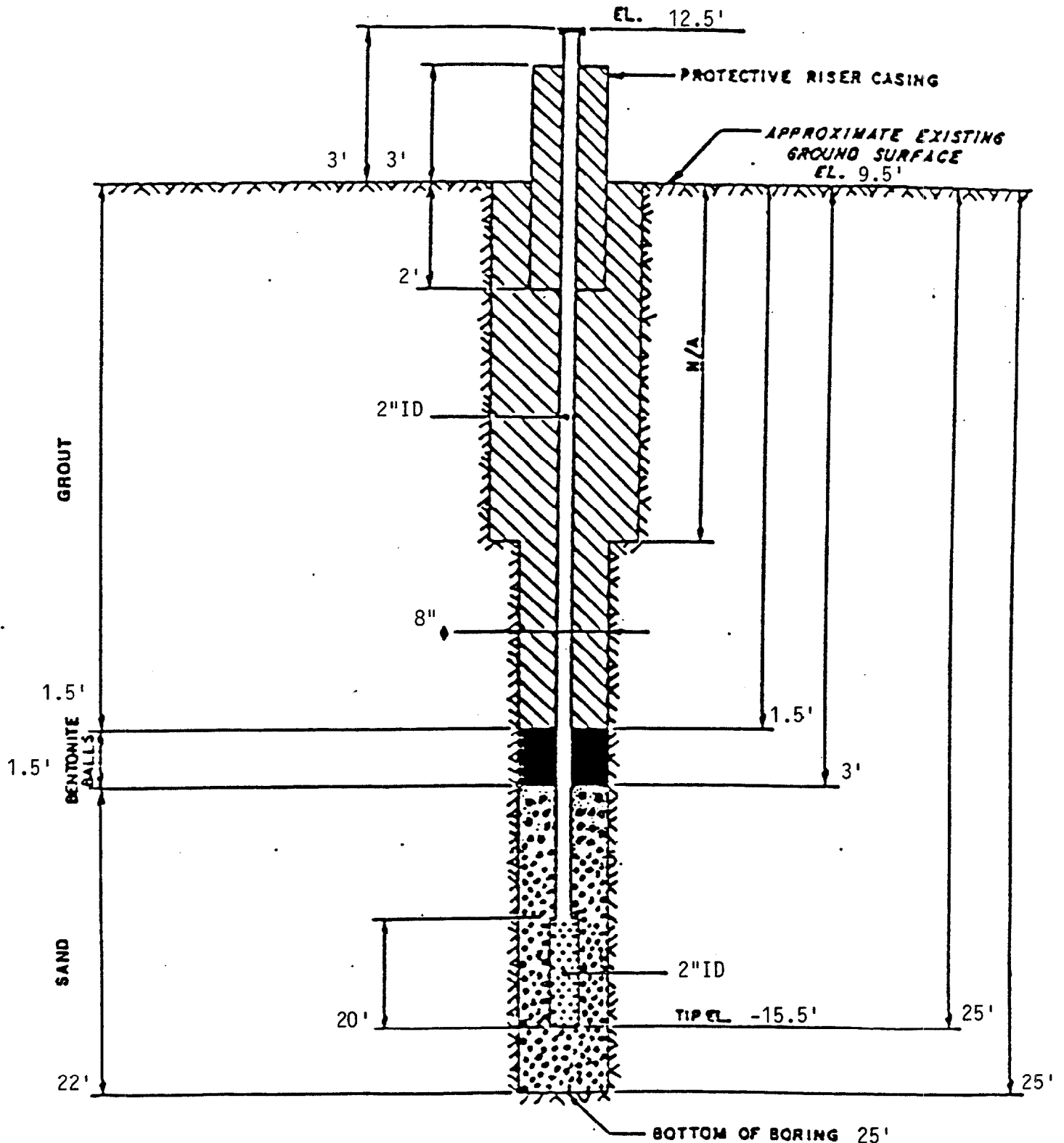
MARKS Grouted and developed 6/22/90 pumped via centrifugal pump approximately 30 gallons
changed from dark black to clear silt free after pumping; well developed slowly. Pump
used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



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MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Key West Remedial Investigation INSTALLED BY K. Dorsey DATE 6/21/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-4



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site 6</u>	
BORING NUMBER: <u>mw 8-5</u>		COORDINATES: <u></u>	DATE: <u>6/1/90</u>
ELEVATION: <u>9.05 ft. MSL</u>	GWL: Depth <u>4'2"</u>	Date/Time <u>6/1/90 - 13:10</u>	DATE STARTED: <u>6/1/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/1/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>2</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	4	N/A	Limestone fill	N/A	N/A	N/A	Time
0-2		7		Gravel to sand size				13:05
		13		tan, white & dry				200-1A
		11		Limestone fill				ppm
2-4		9		Gravel to sand size				
		7		tan/white & dry				
		11		Limestone fill				
4-6		7		Gravel to sand size				
		7		wet				
		6		Limestone fill				
6-8		5		Gravel to sand size				
		4		wet				
		4		Limestone fill				
8-10		3		Gravel to sand size				
		2		wet				
		3		Limestone fill				
		3		Gravel to sand size				
10-12		3		wet				
		4		Limestone fill				200-1B
		3		Gravel to sand size				ppm
12-14		5		wet				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

NOTE: Bentonite pellets
 used and allowed
 to hydrate

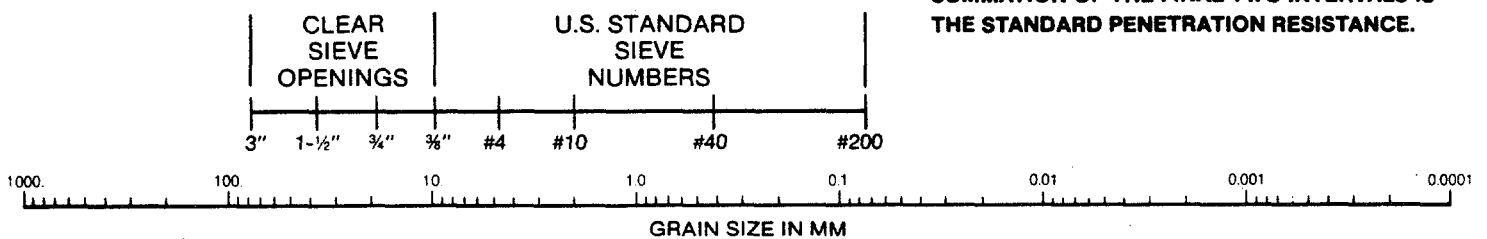
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
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VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remediation Investigation - Site 1	
BORING NUMBER: MW 5-5	COORDINATES: N/A	DATE: 3-1-00
ELEVATION: 9.05 ft. MSL	GWL: Depth 4'2" Date/Time 6/1/99 - 13:10	DATE STARTED: 3-1-00
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A Date/Time N/A	DATE COMPLETED: 3-1-00
DRILLING METHODS: Hollow Stem Auger/Split Spoon		PAGE 5 OF 5

DEPTH ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16		11 12	N/A	Limestone fill Gravel to sand size, wet	N/A	N/A	N/A	Time 13:40
16-18		12 25 16 14		16'-17' - Limestone fill Gravel to sand, wet 17'-18' - Oolitic Limestone				
18-20	MUSF 5 SP TOX	11 14 11 10	✓	Oolitic Limestone Fine sand size	✓	✓	✓	13:40 20VA ppm
				End of boring				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin + Alex

NOTE: Bentonite pellets
added and sporel
to separate

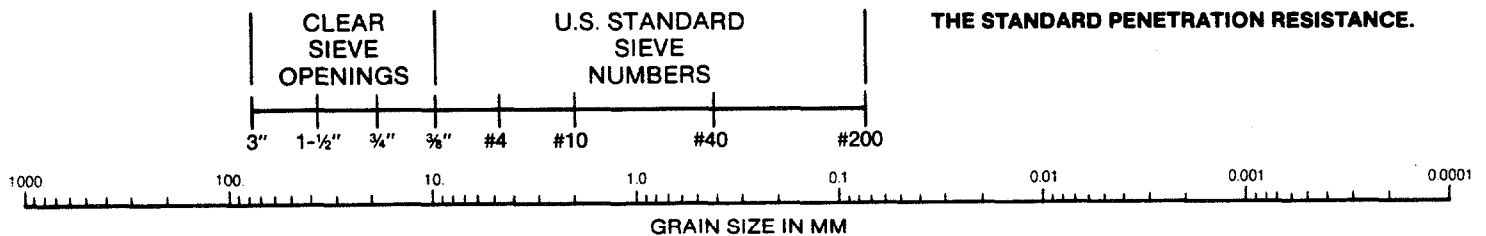
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

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GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 7/20/90
BORING NO. MW8-5 DATE OF INSTALLATION 6/11/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>8'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		9.05	
GROUND SURFACE	0.0		6.05	
BOTTOM OF PROTECTIVE PIPE	1.5		4.55	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	2.0
	TOP	2.0	BOTTOM	2.5
	TOP	2.5	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	3.0	BOTTOM	18.5
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-13.95	
GWL AFTER INSTALLATION	8.66		-2.61	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

REMARKS Well developed and grouted 6/22/90. Pumped 15 gallons by centrifugal pump. Color changed from silty grey to sand free clear. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.

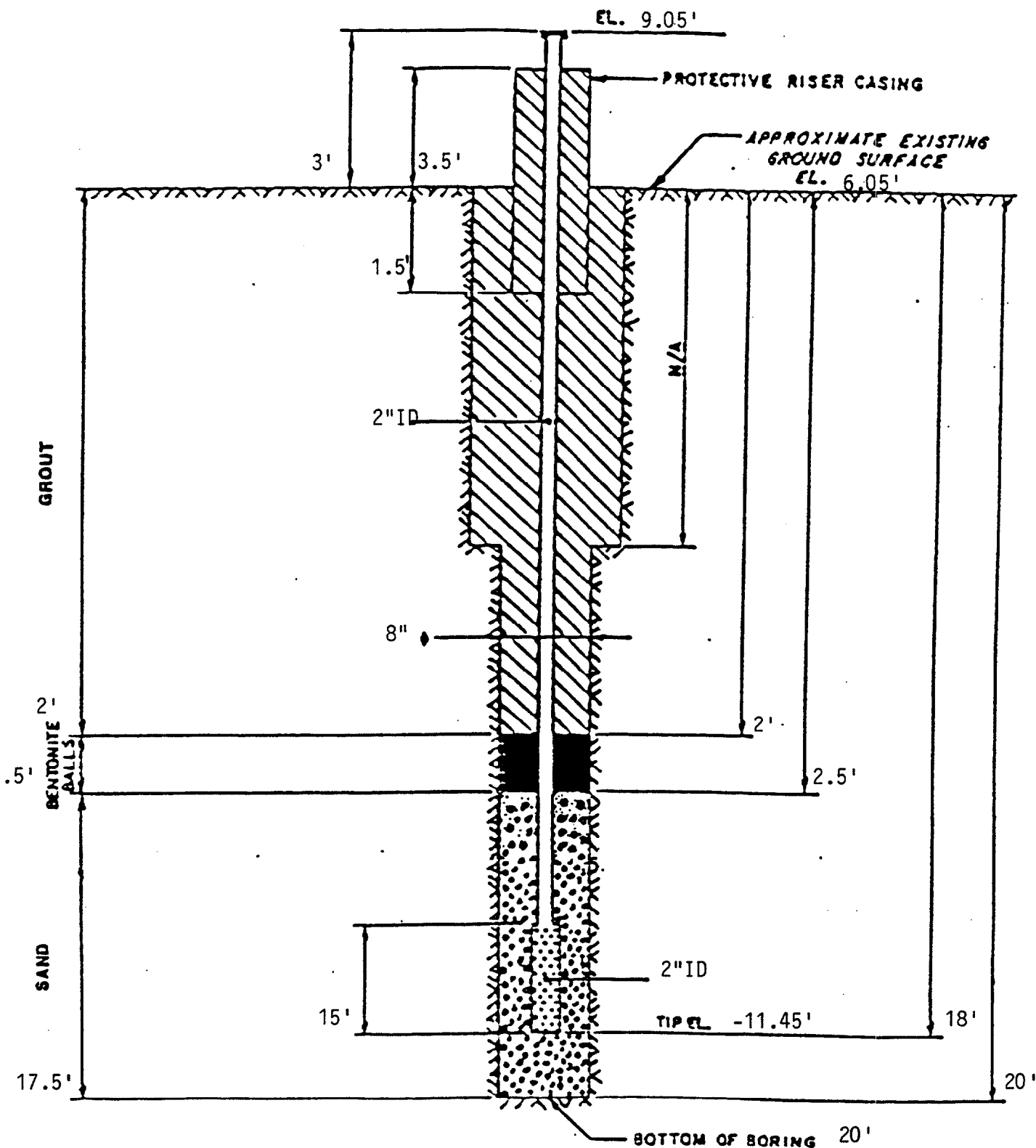


Key West Remedial

INSTALLED BY K. Dorsey DATE 6/11/90

CHECKED BY M. Hampton DATE 9/20/90

_____ 07/18/98



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - 0.75</u>	
BORING NUMBER: <u>MW 8-6</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/1/90</u>
ELEVATION: <u>8'39" to MSL</u>	GWL: Depth <u>5.5'</u> Date/Time <u>6/1/90 - 15:05</u>	DATE STARTED: <u>6/1/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>5.5'</u> Date/Time <u>6/1/90</u>	DATE COMPLETED: <u>6/1/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>		PAGE <u>OF 2</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	10 16 20 11	N/A	Limestone fill Gravel to sand size Tan/white + gray	N/A	N/A	N/A	Organic Time OVA ready 4:00pm
2-4		5 2 1		Limestone fill Gravel to sand size Tan/white + gray				
4-6		4 3 4		Limestone fill Gravel to sand size Tan/white + gray				OVA 3:00pm
6-8		2 4 2		Limestone fill Wet Gravel to sand size				3:00pm
8-10		3 3		Limestone fill Wet Glass & wood				
10-12		1		Limestone fill, wet Gray to sand brown Brown to 11'				
12-14		1		Limestone mud				
14-16		1		Limestone mud Gray, white				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

NOTE: Bentonite pellets
 added and allowed
 to hydrate

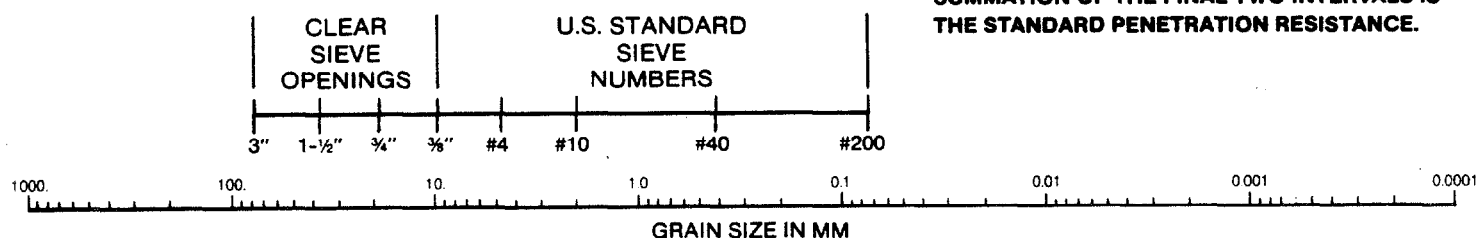
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>	PROJECT NAME: <u>Key West Remedial Investigation</u>		
BORING NUMBER: <u>MW 8-6</u>	COORDINATES: _____		DATE: <u>6/1/90</u>
ELEVATION: <u>7.59' to MSL</u>	GWL: Depth <u>5.5</u>	Date/Time <u>6/1/90-15:05</u>	DATE STARTED: _____
ENGINEER/GEOLOGIST: <u>R. Dorsey</u>	Depth <u>5.5</u>	Date/Time <u>6/1/90</u>	DATE COMPLETED: _____
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE _____ OF _____

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14-16	MW Split Spoon	1	N/A	Limestone mud Gray/white	N/A	N/A	N/A	Time Organic Vapor (ppm)
		2		Limestone mud to 17'				
		11		Limestone to 18'				15:45 OVA
16-18	MWSE 6	14		Tan, white				3ppm
		38						
	EP	10		White limerock				1600
	TOX	10						
18-20		12						
		14						

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin J. [unclear]

note: Bentonite pellets added
 and allowed to hydrate

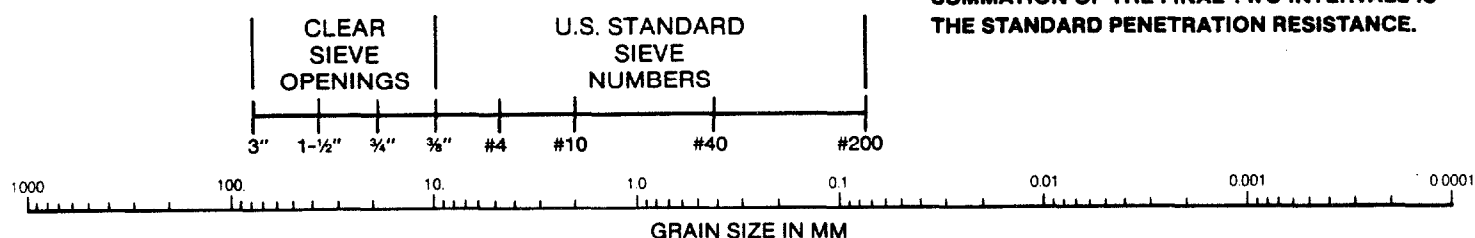
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-6 DATE OF INSTALLATION 6/11/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>7'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joint.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		9.36	
GROUND SURFACE	0.0		6.36	
BOTTOM OF PROTECTIVE PIPE	1.5		4.36	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	2.0
	TOP	2.0	BOTTOM	20.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	3.0	BOTTOM	18.0
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-13.64	
GWL AFTER INSTALLATION	4.8		0.26	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

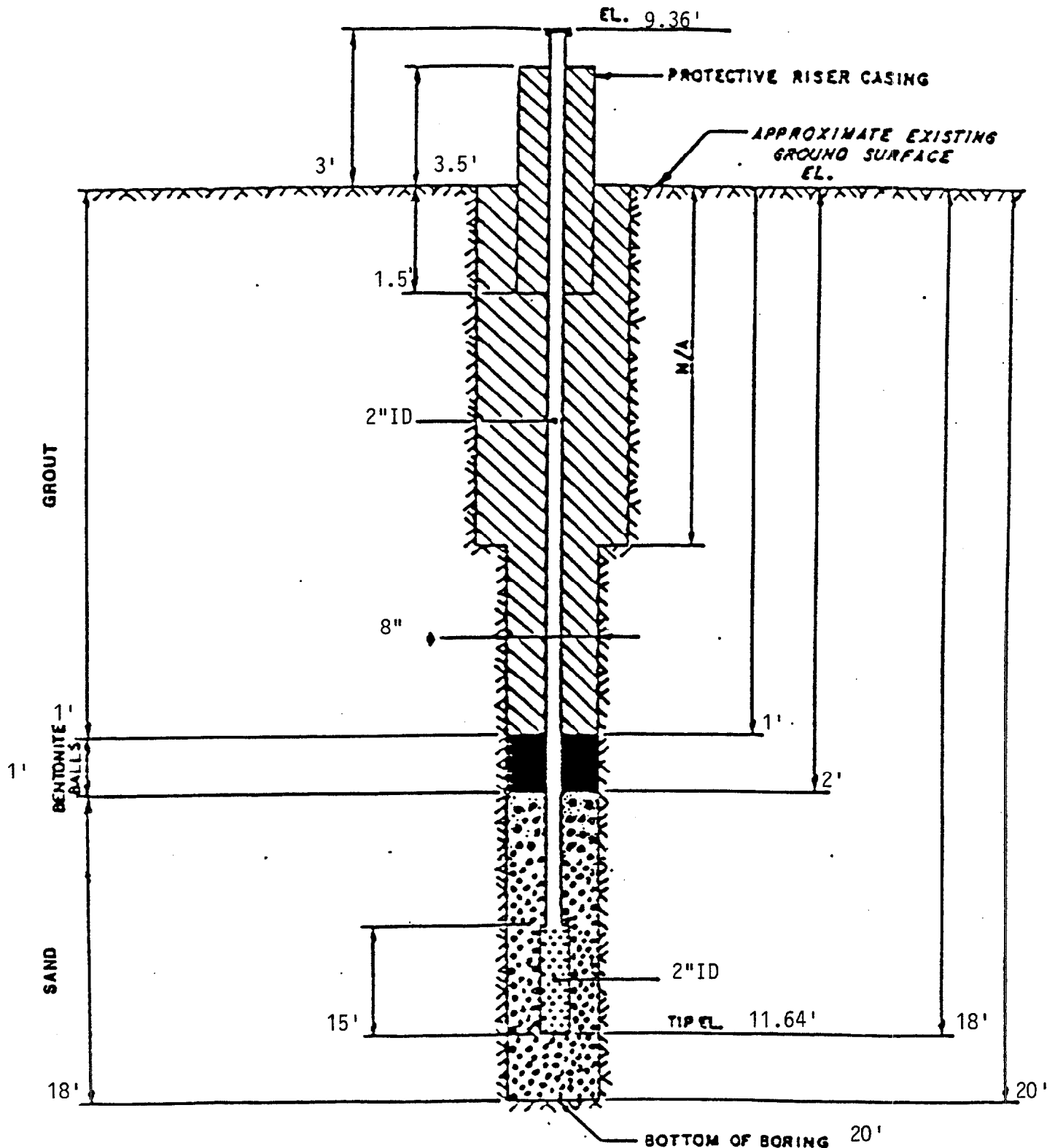
REMARKS Well grouted and pumped on 6/22/90. Pumped approximately 15 gallons via centrifugal pump. Changed color from dark silty to clear sand free water. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



Key West Remedial

INSTALLED BY K.Dorsey DATE 6/11/90

CHECKED BY M. Hampton DATE 9/20/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - S/H-8</u>	
BORING NUMBER: <u>MW16R</u>		COORDINATES: <u>N/A</u>	DATE: <u>6-21-90</u>
ELEVATION: <u>12.50</u>		GWL: Depth <u>3'</u> Date/Time <u>6/21/90</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>C. Callagari</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6-21-90</u>
DRILLING METHODS: <u>Hollow Stem Auger</u>		PAGE <u>1</u>	OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>					<u>Organic</u> <u>Time</u>
0-2		<u>N/A</u>		<u>Crushed Limestone (major)</u> <u>Sand & Gravel (minor)</u>	<u>PT</u> <u>N/A</u>			<u>14:00</u>
2-3				<u>2'-3' Limestone Filling</u>				
3-4				<u>3'-4' Limestone, Saturated</u>				
4-6				<u>Saturated Limestone</u>				
6-8				<u>Saturated Limestone</u>				
8-10				<u>Saturated Limestone</u>				
10-12				<u>Saturated Limestone</u>				
12-13								

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Unit
 Driller: Kevin

note: Bentonite Added
 and allowed to hydrate.
 Blow counts were N/A
 because replacing a pre-
 existing well and not
 needed for casing removal.

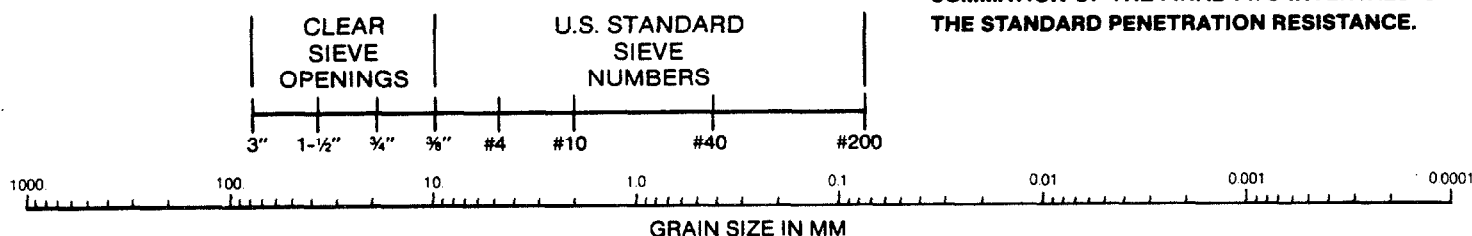
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
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COBBLES	GRAVEL		SAND			SILT AND CLAY
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SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
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	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Forest Service - 1000 - 8</u>	
BORING NUMBER: <u>FW 10R</u>	COORDINATES: <u>✓</u>	DATE: <u>5-5-90</u>
ELEVATION: <u>2.50</u>	GWL: Depth _____ Date/Time <u>5/21/90</u>	DATE STARTED: <u>5/21/90</u>
ENGINEER/GEOLOGIST: <u>C. C. J. J. J.</u>	Depth _____ Date/Time <u>5/21/90</u>	DATE COMPLETED: <u>5/21/90</u>
DRILLING METHODS: <u>Follow Stem - 1000</u>	PAGE <u>2</u> OF <u>2</u>	

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	N/A	N/A					Time <u>10:00 AM</u>
13-14	N/A	N/A	N/A	Saturated Limestone	N/A	N/A	N/A	
14-16				Saturated Limestone				
16-18				Lime mud Brown/gray				
18-20	✓	✓	✓	Lime mud Brown/gray End of boring	✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin

Note: Bentonite pellets added and allowed to hydrate

CONSISTENCY OF COHESIVE SOILS

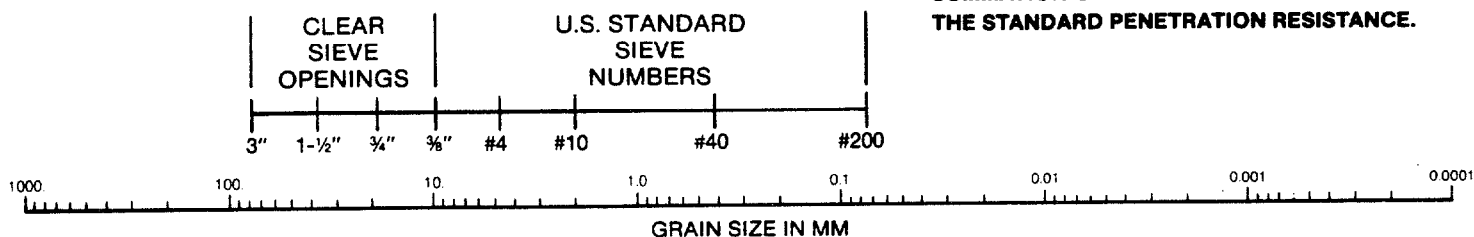
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
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LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

Site 8
mw

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



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	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
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	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/21/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW-16R Replacement DATE OF INSTALLATION 6/21/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>6'</u>
TOTAL PERFORATED AREA <u>15'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap.</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		8.09	
GROUND SURFACE	0.0		5.09	
BOTTOM OF PROTECTIVE PIPE	2.0		3.09	
BOREHOLE FILL MATERIALS:				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.0	TOP 5.09	BOTTOM 4.09
BENTONITE 3/8" Pellets	TOP 1.0	BOTTOM 2.0	TOP 4.09	BOTTOM 3.09
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 20.0	TOP 3.09	BOTTOM -14.91
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 3.0	BOTTOM 18.0	TOP 2.09	BOTTOM -12.91
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.0		-14.91	
GWL AFTER INSTALLATION	5.16		-0.07	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Bentonite hydrated 6/21/90. Well developed and grouting added 6/22/90. Water changed slowly from dark grey with a slimy residue to clear silt free. Pump used to develop wells was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation-Site #8</u>		
BORING NUMBER: <u>B-1</u>	COORDINATES: <u>N/A</u>		DATE: <u>5/30/93</u>
ELEVATION: <u>9.4</u>	GWL: Depth <u>5.5'</u>	Date/Time <u>5/30/90-16:15</u>	DATE STARTED: <u>5/30/93</u>
ENGINEER/GEOLOGIST: <u>K. [Signature]</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/30/93</u>
DRILLING METHODS: <u>[Handwritten]</u>			PAGE <u>1</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	7	N/A	Limestone Fill, dry	N/A	N/A	N/A	Organic Vapor (ppm)
0-2		8		Gravel to sand size				Time 16:05
		8		Limestone fill, dry				
2-4		6		Cloth				
		3		Limestone Fill				40 ppm
4-6		3		Plastic + metal				OVA
		9		Wet @ 5.5'				
				product odor, liquid dark				
		3		Spoon empty				
6-8		20		product odor				
		2						
		2						
		4		Limestone Fill				
		3		Gravel to sand size				
8-10		7		Plastic + glass				
		8		product odor, black liquid				
		6		Limestone Fill				6 ppm
		4		Gravel to sand size				OVA
10-12		3		Product odor, black liquid				
		1						
		2		Spoon empty				
12-14		1						
		1						
14-15	✓	1	✓	14'-15' Limestone fill gravel size, product odor	✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Unit
 Driller: Kevin & Alex

NOTE: Bentonite pellets
 added and allowed
 to hydrate

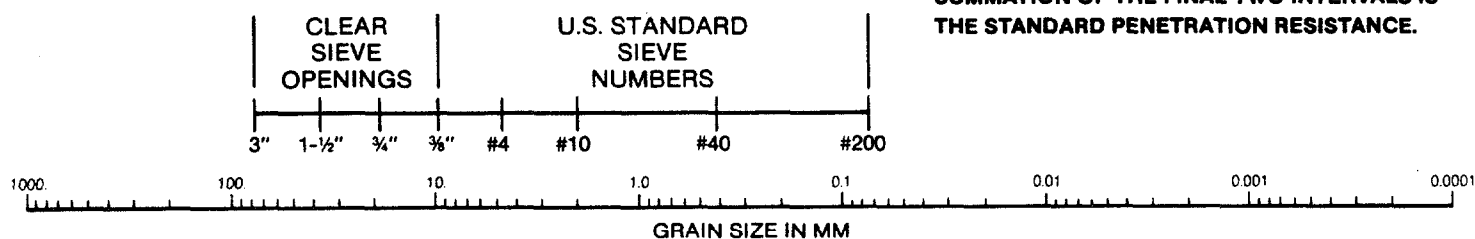
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site #8	
BORING NUMBER: B-1	COORDINATES: N/A	DATE: 5/30/90
ELEVATION: 9.4	GWL: Depth 5.5 Date/Time 5/30/90-16:15	DATE STARTED: 5/30/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A Date/Time N/A	DATE COMPLETED: 5/30/90
DRILLING METHODS: <u>Open Hole Drilling</u>	PAGE 2 OF 2	

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
15-16	N/A	1	N/A	15'5"-16'- Lime mud gray/white	N/A	N/A	N/A	Time Organic vapors 3.0ppm OVA
		2		Limestone fill + mud				
		1		Glass				
16-18		2		Product Odor				
		2		Limestone fill				
		2		Little lime mud, shell				
18-20		5		Fragments visible				
		6		Limestone fill + mud				
		4		Glass				
20-22		4						
		4						
		4						
22-24	BSF 1 EP TOX	5		22'-23'- Limestone fill Glass fragments				16:45 3.0ppm OVA
		6		23'-24'- Lime rock, white				
		5						
	N/A	5		Lime rock, white				
		5						
24-26		4						
				END of BORING				(22.5 approximate divide between land fill + base)

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

Note: Bentonite pellets
added and allowed
to hydrate

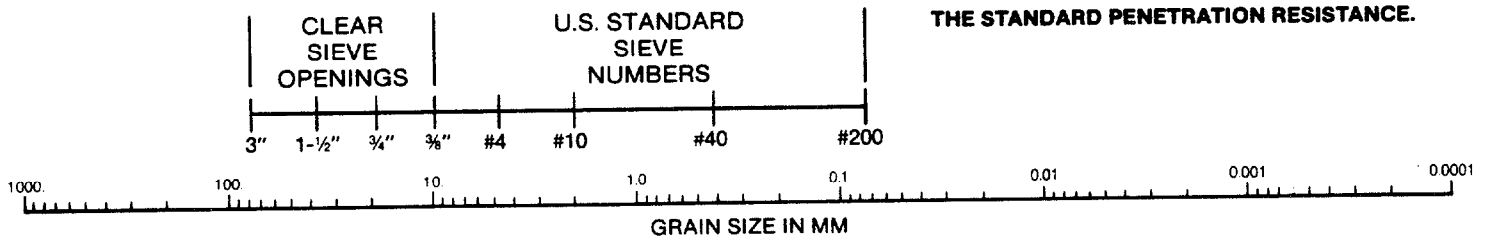
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remco. 21 Inspection - Site #8</u>	
BORING NUMBER: <u>3-2</u>		COORDINATES: <u>N/A</u>	DATE: <u>5/31/90</u>
ELEVATION: <u>9.1</u>		GWL: Depth <u>8'</u> Date/Time <u>5/31/90 - 9:00</u>	DATE STARTED: <u>5/31/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/31/90</u>
DRILLING METHODS: <u>Standard Penetration Test Soil Borings</u>			PAGE <u>1</u> OF <u>2</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	8 24 44 62	N/A	Limestone fill, dry	N/A	N/A	N/A	Time 9:00 Organic Vapor (ppm) 60ppm OVA
2-4				Refusal, no recovery Auger down to 4'				1.5ppm OVA
4-6		6 4 4		Limestone fill, dry Plastic, AA dry battery, paper				
6-8		6 3 3		Limestone fill, dry				
8-10		1 1 1		Limestone fill, wet				
10-12		2 4 4		Limestone fill, gray metal, black liquid Spoon 20% empty				
12-14		6 4 4		Limestone fill, gray Glass, metal, black liquid Spoon 90% empty				
14-16		2 2 1		14'-14.5'- Limestone fill, gray Black liquid	✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin & Alex

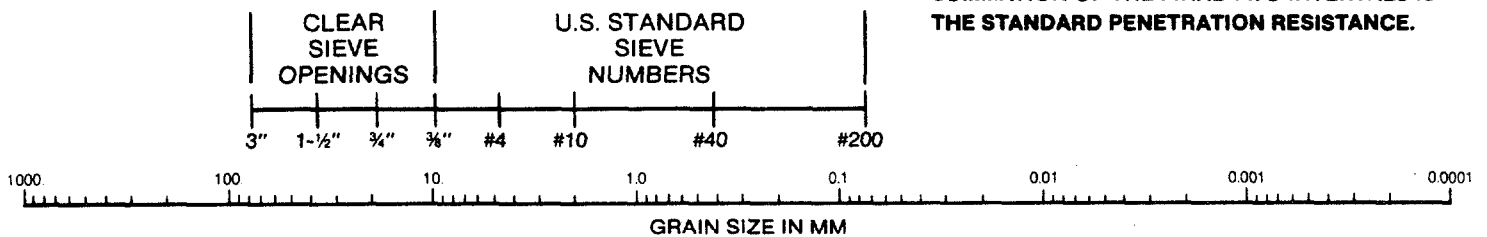
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation-Site #2	
BORING NUMBER: 3-2	COORDINATES: N/A	DATE: 5/31/90
ELEVATION: 9.1	GWL: Depth 8' Date/Time 5/31/90-9:00	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: R. Dorsey	Depth N/A Date/Time N/A	DATE COMPLETED: 5/31/90
DRILLING METHODS: Standard Penetration test/Soil Coring		PAGE 3 OF 2

DEPTH ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
14.5-16	N/A	1	*	14.5-16 fine mod, white black liquid	N/A	N/A	N/A	Time Organic Vapors
16-18	✓	2		Limestone fill, gray				1.5 ppm OVA
		1		Plastic, black liquid				
		6		Spoon 75% empty				
18-20	30F-2 EP TCY	11 10 10	✓	Lime rock white Sampled	✓	✓	✓	9:30
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin & Alex

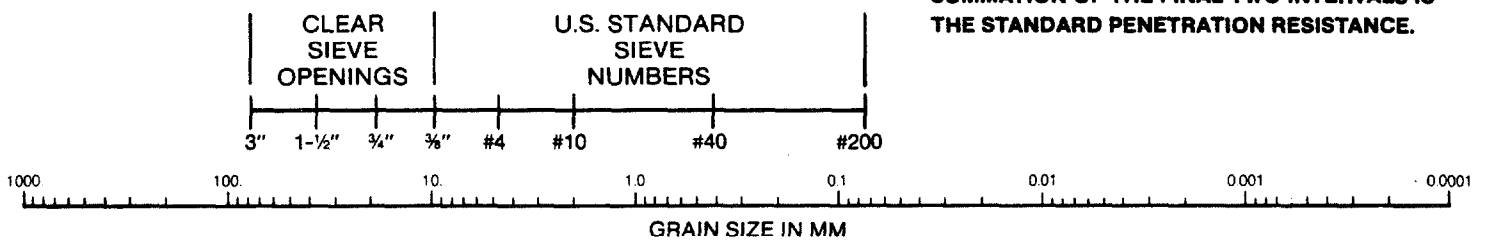
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site # 8	
BORING NUMBER: B 3	COORDINATES: 22	DATE: 5/31/90
ELEVATION: 7.8	GWL: Depth 6' Date/Time 5/31/90-11:15	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth 7.4 Date/Time N.A.	DATE COMPLETED: 5/31/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 2

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2		1 2 6 10	NA	Limestone fill, dry Wood	NA	NA	NA	Time 11:15
2-4		12 7 3 3		Limestone fill, dry wood				
4-6		5 4 3 26		Limestone fill, dry Plastic				1 ppm OVA
6-8		4 6 8 6		Limestone fill, wet, gray Spoon 90% empty Black liquid in rubber hose				
8-10		4 3 1 1		Limestone fill, wet, gray Gravel to sand size Spoon 95% empty Black liquid				
10-12		1 1 1 1		Limestone fill, wet, gray Gravel to sand size, wood Spoon 95% empty Black liquid				
12-14		1 1 1		Limestone fill Lime mud, gray Black liquid				
14-15		1	✓		✓	✓	✓	

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin + Alex

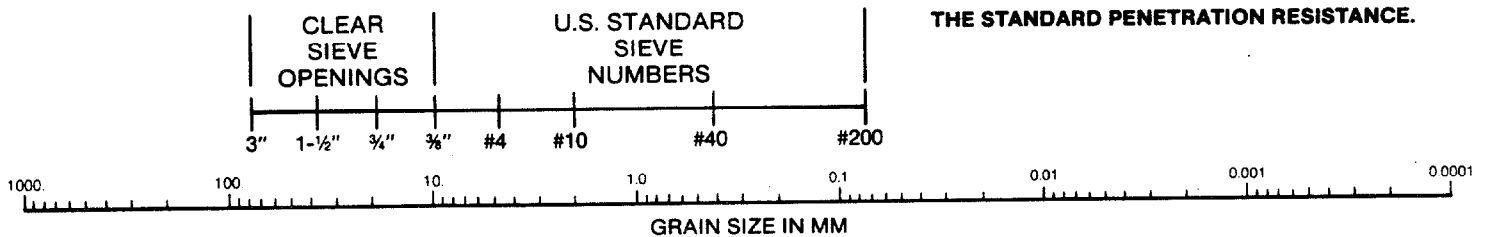
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site # 8</u>	
BORING NUMBER: <u>B 3</u>		COORDINATES: <u>N/A</u>	DATE: <u>5/31/90</u>
ELEVATION: <u>7.8</u>		GWL: Depth <u>6'</u> Date/Time <u>5/31/90</u>	DATE STARTED: <u>5/31/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/31/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>2</u> OF <u>2</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
15-16		1	N/A	Limestone fill, black liquid Gray sand to pea oolites	N/A	N/A	N/A	Time Organic Vapor (ppm) 2ppm OVA
16-18		1		Limestone fill, sand size Lime mud, gray				
		2		Black liquid				
18-20	BSF-3 EP-70X	6		Limestone fill-gravel to sand size				2ppm OVA
		8		Lime mud, gray				
		12		Gray fill 4" lime rock				12:00
		20	↓	Black liquid	↓	↓	↓	
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

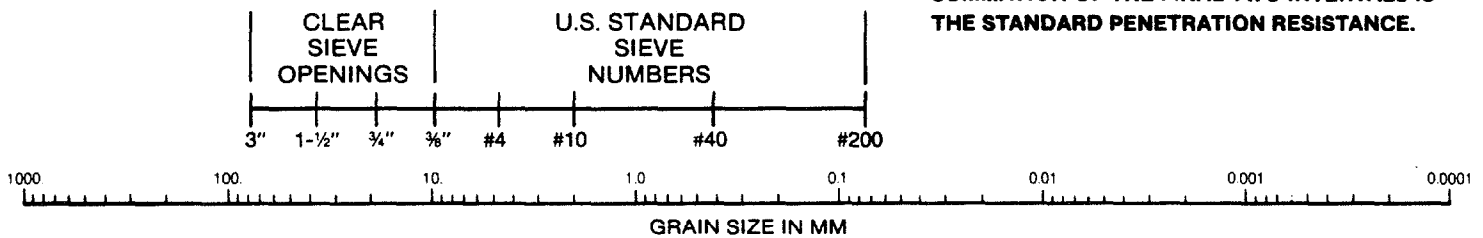
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Keweenaw Remedial Investigation Site - 8</u>	
BORING NUMBER: <u>B-4</u>		COORDINATES: <u>N/A</u>	
ELEVATION: <u>7.3</u>		DATE: <u>5/31/90</u>	
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>		DATE STARTED: <u>5/31/90</u>	
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		DATE COMPLETED: <u>5/31/90</u>	
		PAGE <u>1</u> OF <u>2</u>	

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	12 14 10	N/A	Limestone Fill, dry	N/A	N/A	N/A	Organic Time 12:40 1 ppm
2-4		9 7 7		Limestone Fill, dry Dark, stained limestone				
4-6		7 5 6		Limestone Fill, dry				
6-8		5 5 7		Limestone Fill, wet				
8-10		2 4 6		Limestone Fill, wet				1 ppm
10-12		5 3 3		Limestone Fill, wet				
12-14		11 32 14		8" Wet Limestone Fill Rest Lime mud				
14-15		10 1		Gray/white Lime mud gray/white				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin

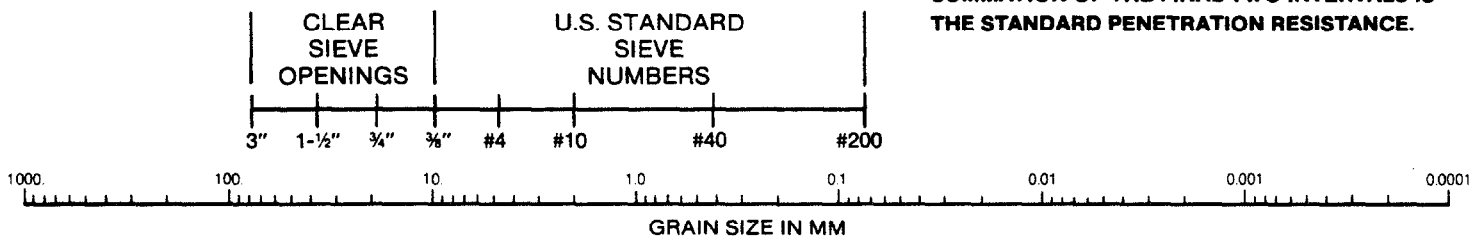
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

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SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site #8	
BORING NUMBER: B-4	COORDINATES: N/A	DATE: 5/31/90
ELEVATION: 7.3	GWL: Depth 6' Date/Time 5/31/90-13:10	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A Date/Time N/A	DATE COMPLETED: 5/31/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 2 OF 2

DEPTH ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
15-16	N/A	1	N/A	Lime mud, gray/white	N/A	N/A	✓	Time Organic Vapor (ppm)
16-18		1		Lime mud, gray/white Fires				
18-20		1		Lime mud, gray/white Fires				
20-22	BSF-4 EP TOX	20 33 40 35	✓	Limestone gravel, some Limestone fill Lime rock	✓	✓	✓	13:10 1ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill ?
Driller: Kevin

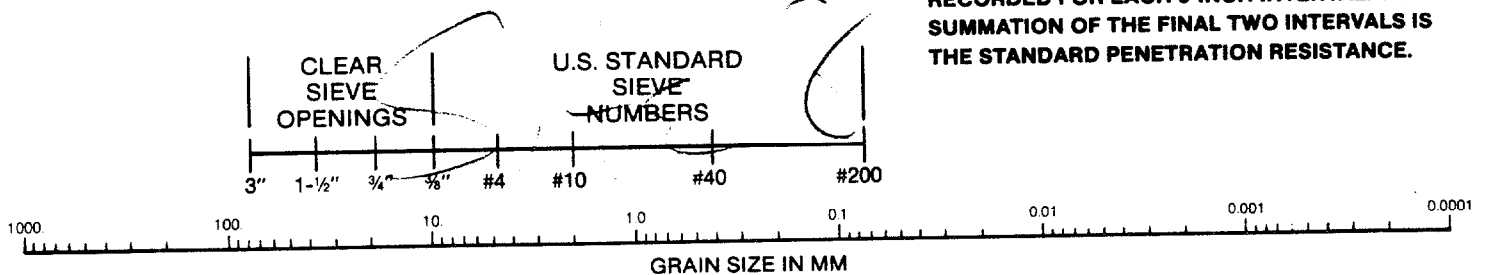
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
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COBBLES	GRAVEL		SAND			SILT AND CLAY
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GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Site 9
Trumbo Point Fuel Farm and Piers

WELL CONSTRUCTION DETAILS - SITE 9

**Trumbo Point Annex, Fuel Farm and Piers
NAS-Key West
Key West, Florida
IT Project No. 595392**

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft) MSL	GROUND SURFACE ELEVATION (ft) MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL (ft) MSL	SLOT SIZE (in)	THICKNESS OF SAND PACK (ft)	THICKNESS OF BENTONITE SEAL (ft)	THICKNESS OF GROUT COLUMN (ft)
MW 9-10	05/31/90	9.75	6.75	10	7.5	4.25 to -3.25	0.010	9	0.5	0.5
MW 9-11	05/31/90	10.45	7.45	10	7.5	4.95 to -2.05	0.010	9	0.5	0.5
MW 9-12	05/31/90	9.56	6.56	10	7.5	4.06 to -3.44	0.010	9	0.5	0.5
MW-6R	05/31/90	9.75	6.75	10	7.5	4.25 to -3.25	0.010	9	0.5	0.5



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - 1000		
BORING NUMBER: MW 9-10	COORDINATES: N/A	DATE: 5/31/90	
ELEVATION: 9.85	GWL: Depth 4'	Date/Time 5/31/90-10:05	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A	Date/Time N/A	DATE COMPLETED: 5/31/90
DRILLING METHODS: Hollow Stem Auger, Split-Spoon			PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-1'	N/A	6	N/A	0-1'- Organic Top Soil	PT	N/A	N/A	Organic
1-2'		10		1-2'- Limestone fill w/ gravel	N/A			Time 10:00
2-4'		10		Limestone fill w/ gravel				
4-6'	Lead Spoon Analysis	10		Limestone fill w/ gravel				10:30
6-8'		10		(Free Product Present) Limestone mud and colored Limestone				
8-10'		10		Free Product				10:30
10-12'		10		End of boring				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford F-700 Hydraulic Drill
Driller: Mike + Ed

Note: Bentonite pellets
were added to the hole

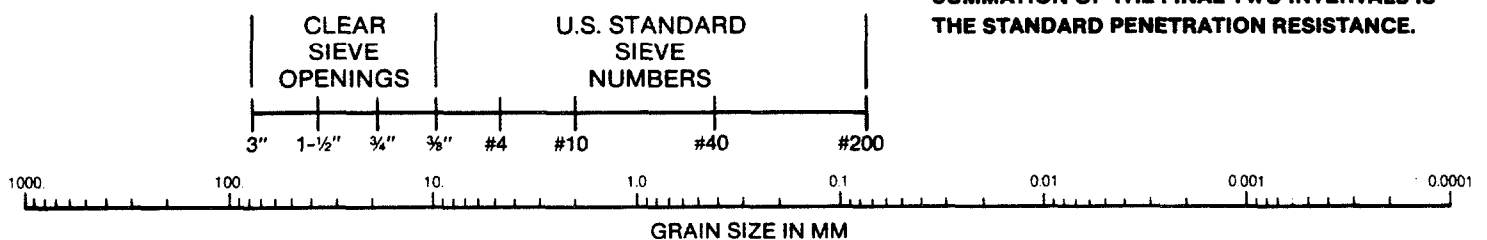
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation
PROJECT NO. 595392
BORING NO. MW9-10

FIELD ENG./GEO. C. Callegari

DATE 5/31/90

CHECKED BY G. Stephens

DATE 9/20/90

DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u>and D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>5'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "O"</u>
TOTAL PERFORATED AREA <u>7.5'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		9.75	
GROUND SURFACE	0.0		6.75	
BOTTOM OF PROTECTIVE PIPE	1.5		5.25	
BOREHOLE FILL MATERIALS:				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM .5	TOP 6.75	BOTTOM 6.25
BENTONITE 3/8" Pellets	TOP .5	BOTTOM 1.0	TOP 6.25	BOTTOM 5.75
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 10.0	TOP 5.75	BOTTOM -3.25
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 2.5	BOTTOM 10.0	TOP 4.25	BOTTOM -3.25
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-3.07	
GWL AFTER INSTALLATION	N/A		N/A	

5 S THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

REMARKS Well grouted and developed 5/31/90, product was observable at seven foot depth in split spoons, developed until clear sand/silt free water, via centrifugal pump, approximately 30 gallons, complete at 10:30. Pump was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



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MONITOR WELL INSTALLATION SKETCH

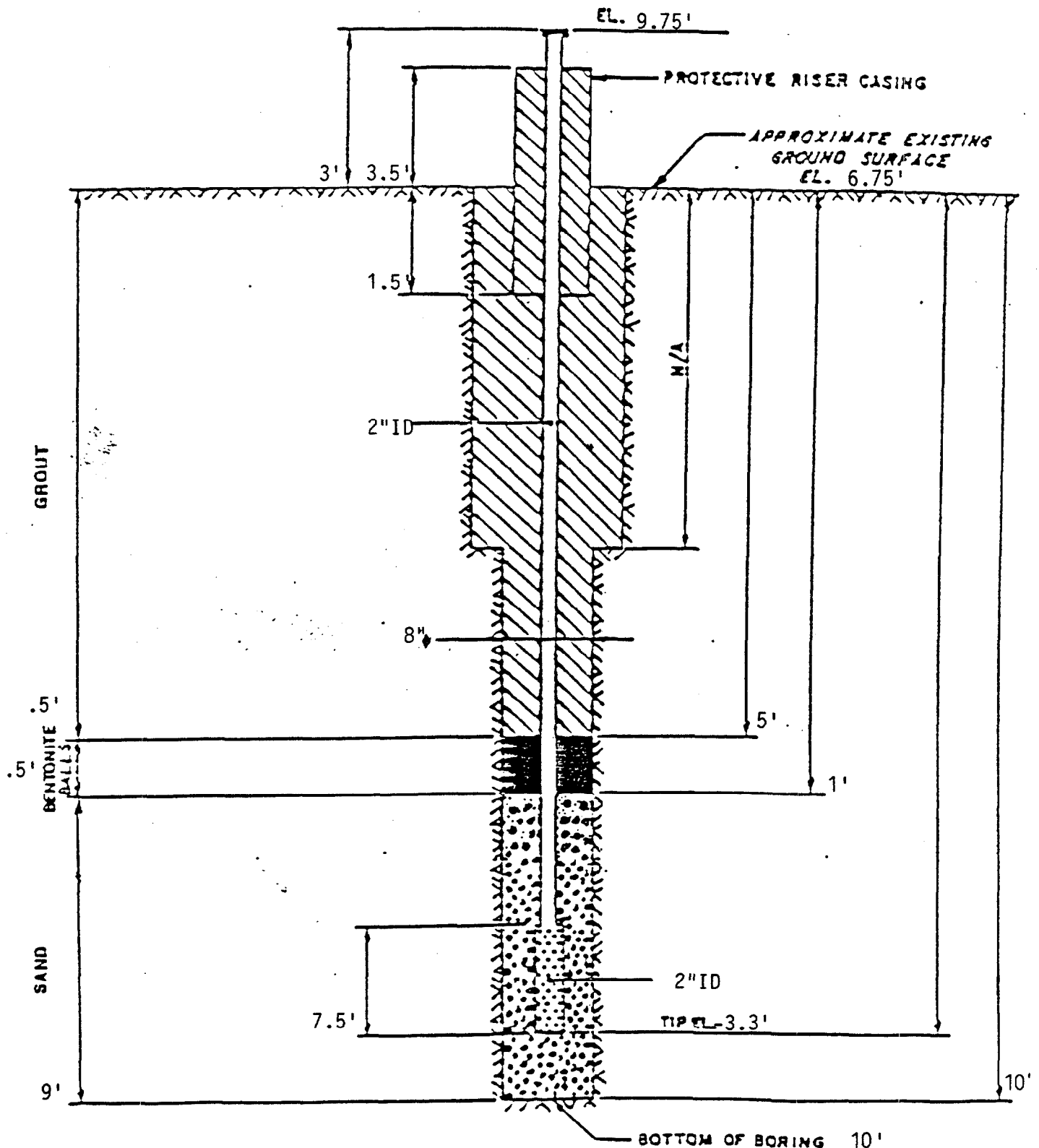
PROJECT NAME Key West Remedial Investigation

INSTALLED BY C. Callegari DATE 5/31/90

PROJECT NO. 595392

CHECKED BY G. Stephens DATE 9/20/90

BORING NO. MW9-10





INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site 9	
BORING NUMBER: MW 9-11	COORDINATES: 22.8	DATE: 5/31/90
ELEVATION: 10.45	GWL: Depth 4' Date/Time 5/31/90 - 11:50	DATE STARTED: 5/31/90
ENGINEER/GEOLOGIST: C. C. 1990	Depth Date/Time	DATE COMPLETED: 5/31/90
DRILLING METHODS: Hollow Stem Auger / Split Spoon		PAGE OF

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	6	N/A	0-1 Organic Top Soil	PT	N/A	N/A	Time Organic Vapor (ppm)
		8		1-2 Limestone Fill	N/A			11:35
		12						
		17						
		20		Limestone w/ Shell				11 ppm
		9		Cracky				
2-4	Head Space	8						
	Analysis	7						
		5		Lime mud				
		2		White/tan				
4-6		3						
		5		Lime mud				
		3		White/tan				
		4						
6-8		2						
		3		Lime mud				
		3		White/tan				12:00
		5						
8-10		4						
				End of Boring				

NOTES:

Drilling Contractor Drilling Solutions
Drilling Equipment Ford-F-700 Mobile Drill
Driller: Mike & Ed

NOTE: Bentonite pellers
used and added
to slurry

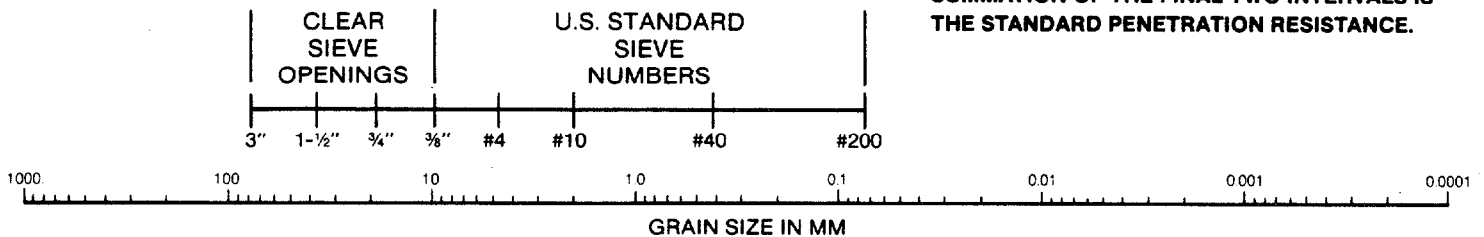
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. C. Callegari DATE 6/19/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW9-11
DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID(S) USED: <u>N/A</u>	CASING SIZE(S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5'</u>
TOTAL PERFORATED AREA <u>7.5'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete Pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		10.45	
GROUND SURFACE	0.0		7.45	
BOTTOM OF PROTECTIVE PIPE	1.5		5.95	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	.5
	TOP	.5	BOTTOM	1.0
	TOP	1.0	BOTTOM	10.0
	TOP	N/A	BOTTOM	N/A
PERFORATED SECTION	TOP	2.5	BOTTOM	9.5
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-2.55	
GWL AFTER INSTALLATION	N/A		N/A	

IS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

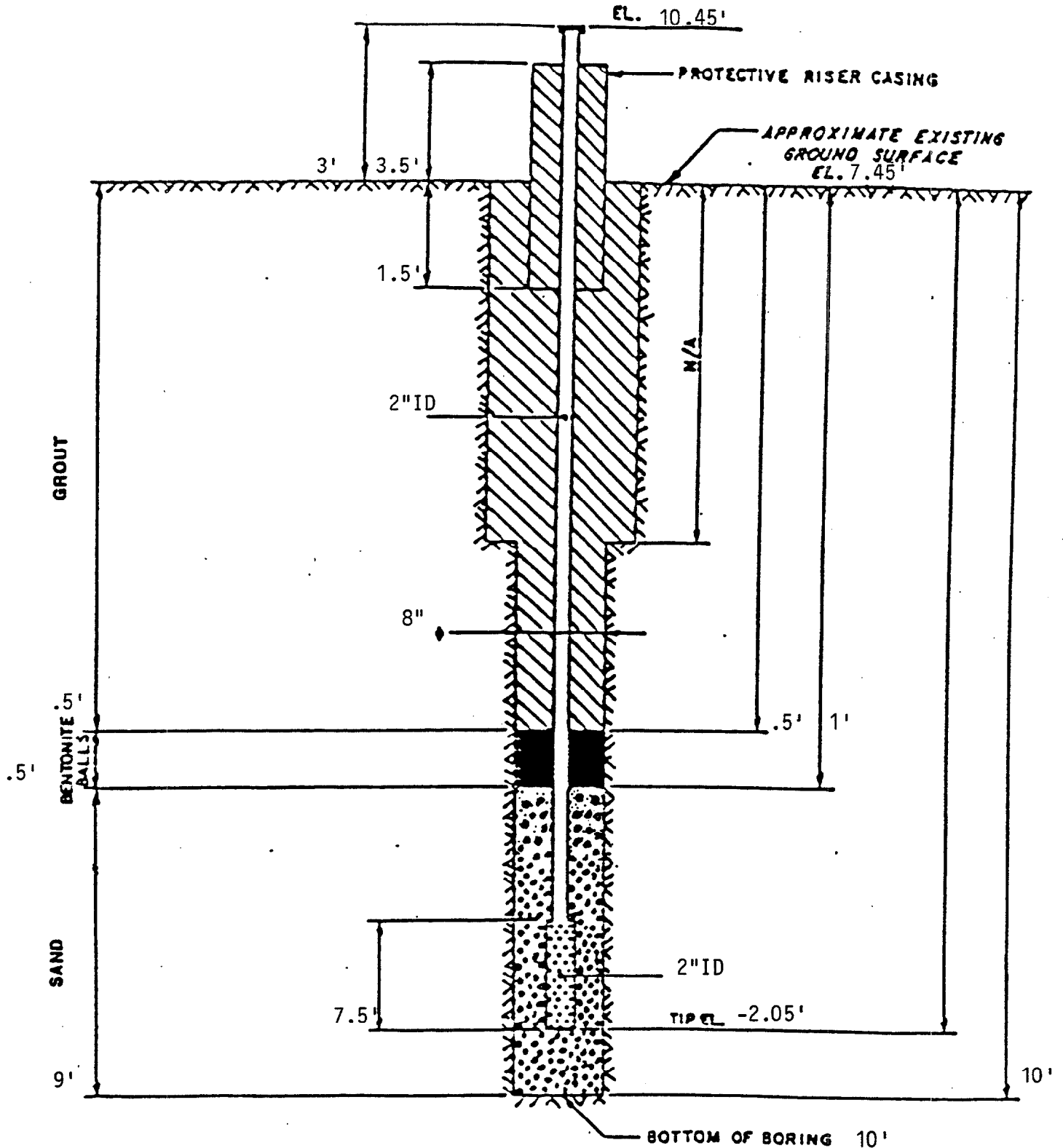
REMARKS Well was developed after installation until water was silt free. 12:00 noon, changed from silt grey to clear, using a centrifugal pump. Pumped approximately 30 gallons.
Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



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MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Key West Remedial Investigation INSTALLED BY C. Callegari DATE 5/31/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW9-11



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>KeyWest Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-39</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>7.08'</u>	GWL: Depth <u>5.5'</u> Date/Time <u>6/6/90 - 12:20</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor (ppm)
0-2	N/A	29 15 15 10	N/A	Limestone fill Unsaturated	N/A	N/A	N/A	Time 12:20
2-4	✓	5 3 4 3		Limestone fill Unsaturated Hard Rx + Shell fragments				
4-6	HEAD SPACE ANALYSIS	4 2 2 1	✓	Oolitic Limestone fill Saturated w/shells	✓	✓	✓	3ppm
END OF BORING								

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

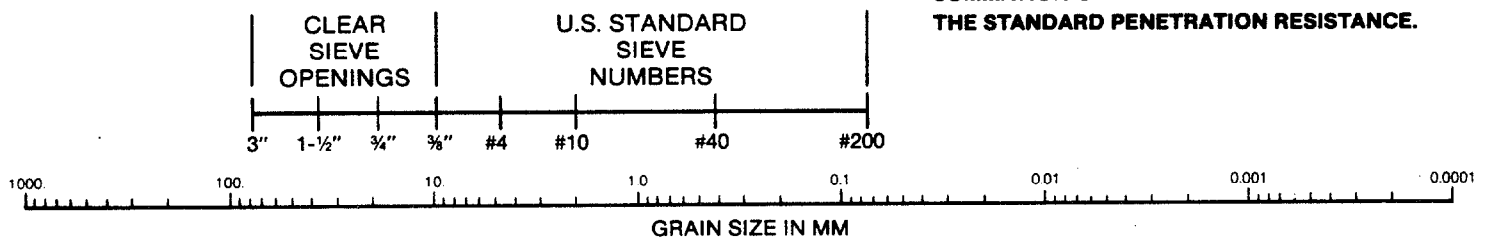
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



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CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: - eul west Remedial Investigation Site #9	
BORING NUMBER: B-38	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 6.9'	GWL: Depth	Date/Time 6/6/90 - 11:55
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A	Date/Time N/A
DRILLING METHODS: Standard Penetration Test / Soil Boring		DATE STARTED: 6/6/90
		DATE COMPLETED: 6/6/90
		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	18 11 9 8	N/A	Limestone fill Loose, clayey	N/A	N/A	N/A	Time 11:55 Organic Vapor (ppm)
2-4	✓	7 3 3 3		Limestone fill w/shells Loose, clayey				
4-6	HEAD SPACE ANALYSIS	4 3 3 2	✓	Limestone fill Silty clay	✓	✓	✓	12:00 0 ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

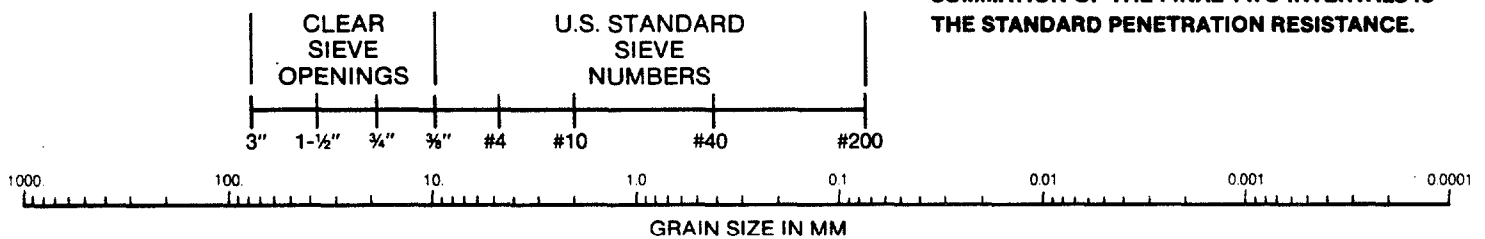
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ^(*)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

^(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site # 9</u>	
BORING NUMBER: <u>B-37</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>6.14</u>		GWL: Depth <u>5.5</u> Date/Time <u>6/6/90-15:09</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (Ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	29	N/A		N/A	N/A	N/A	Time
2-2	✓	11		Limestone fill				15:09
2-4	✓	5		Limestone fill				
4-6	HEAD SPACE ANALYSIS	2		4'-5'-Limestone fill				15:13
		3		5'-6'-Limestone, saturated				1200
		3		Silty, dark				ppm
		3		END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

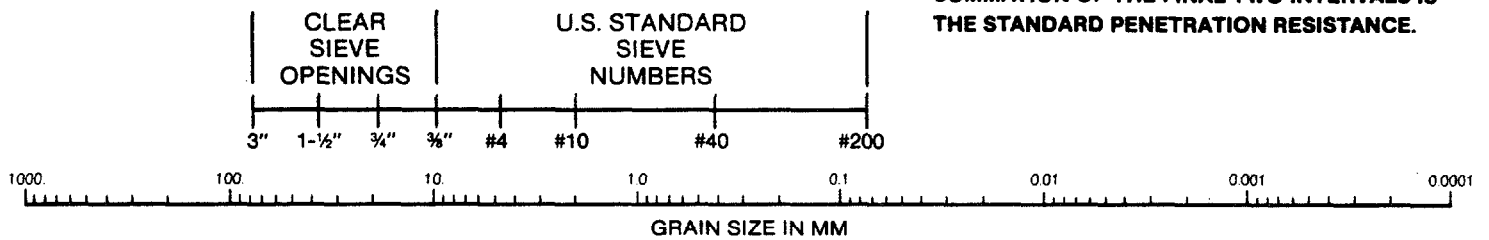
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation Site #9		
BORING NUMBER: 3-36	COORDINATES:		DATE: 6/6/90
ELEVATION: 6.61'	GWL: Depth 4.0'	Date/Time 6/6/90 - 14:50	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test/Soil Boring			PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	42	N/A	Limestone fill	N/A	N/A	N/A	Time Organic Vapor ppm
0-2		10						14:50 35ppm
		7						
		5						
		7						
		6		Limestone fill				
		4						
2-4		4						
	V	3						
	HEAD SPACE ANALYSIS	2		Limestone, silty				14:50 0ppm
4-6		2			V	V	V	
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin + Alex

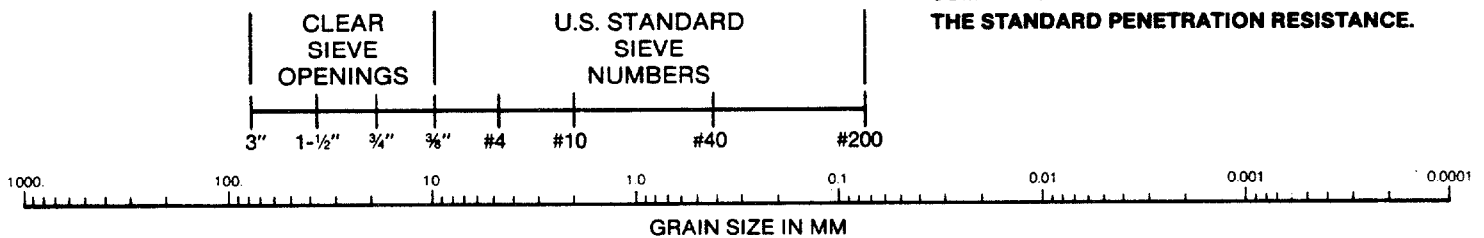
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation-Site #9</u>	
BORING NUMBER: <u>B-35</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>6.24'</u>		GWL: Depth <u>4.5'</u> Date/Time <u>6/6/90-14:30</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>		PAGE <u>1</u>	OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	39 16 7 7	N/A	Lime rock Fill	N/A	N/A	N/A	Time 14:30 100 ppm
2-4		6 5 4 3		Lime rock Fill w/ traces of asphalt				
4-6	HEAD SPACE ANALYSIS	4 3 3 2		Limestone, -an				Time 14:35 100 ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

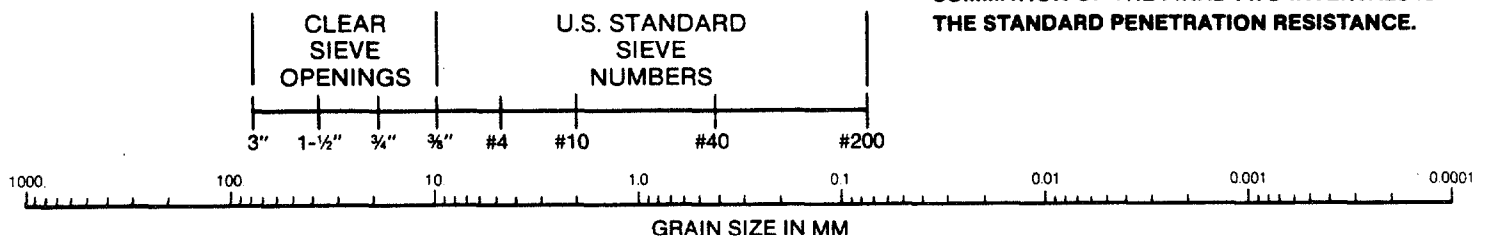
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ^(*)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

^(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-34</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/19/90</u>
ELEVATION: <u>6'</u>		GWL: Depth <u>3'2"</u> Date/Time <u>6/19/90-17:32</u>	DATE STARTED: <u>6/19/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/19/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A ✓	28 14 7 6	N/A	4" Asphalt 12" Limestone fill, dark 8" Limestone fill, light	N/A	N/A	N/A	Time 17:32 Organic Vapor (ppm)
2-4	HEAD SPACE ANALYSIS	3 2 3 2	✓	Limestone fill, light w/ shell fragments	✓	✓	✓	17:37 4ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

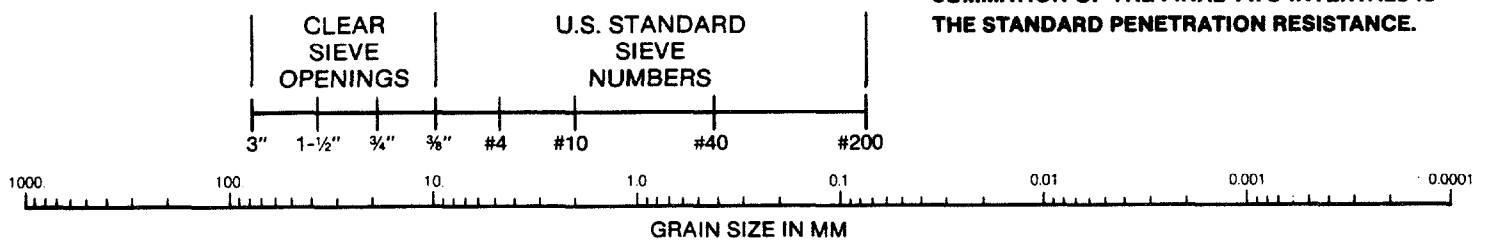
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation Site #9	
BORING NUMBER: B-33	COORDINATES: N/A	DATE: 6/19/90
ELEVATION: 6.52'	GWL: Depth 3'7" Date/Time 6/19/90-17:21	DATE STARTED: 6/19/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/19/90
DRILLING METHODS: Standard Penetration Test/Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	28	N/A	4" Asphalt	N/A	N/A	N/A	Organic vapor (ppm)
		15		1' 8" Limestone fill w/ oolites				Time 17:21
2-4	HEAD SPACE ANALYSIS	5		Limestone fill, sandy				17:28 10ppm
		4						
		1		END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

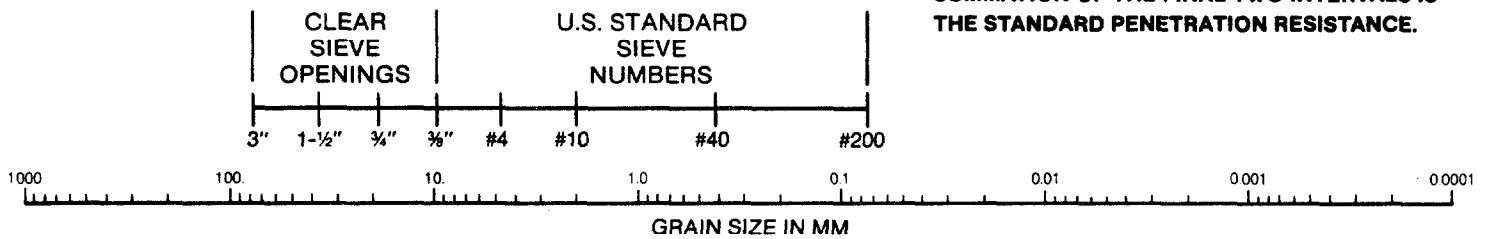
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site 7</u>	
BORING NUMBER: <u>B-32</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/19/90</u>
ELEVATION: <u>6.27'</u>	GWL: Depth <u>3'4"</u> Date/Time <u>6/19/90-17:00</u>	DATE STARTED: <u>6/19/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/19/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	15	N/A	6" - Asphalt	N/A	N/A	N/A	Organic vapor (ppm)
0-2	HEAD SPACE ANALYSIS	8 7 5		6" - 2' - Limestone Fill, light Colitic				Time 17:00
2-4		5 7 3 4		Limestone, light w/oolites				17:15 12 ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

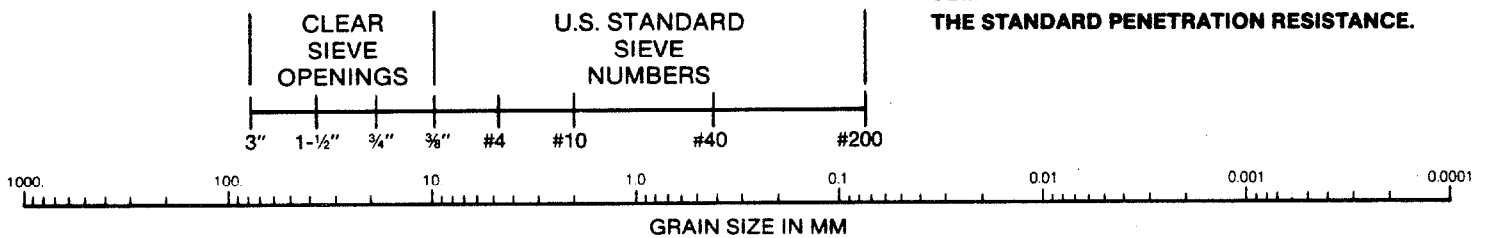
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation Site #9	
BORING NUMBER: B-31	COORDINATES: N/A	DATE: 6/19/90
ELEVATION: 6.35'	GWL: Depth 3'10" Date/Time 6/19/90-17:45	DATE STARTED: 6/19/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/19/90
DRILLING METHODS: Standard Penetration Test/Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER 6" (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A ↓ HEAD SPACE ANALYSIS	25 26 28 13	N/A	2" Asphalt 1'10" Limestone Fill w/sand light/gray	N/A	N/A	N/A	Time Organic Vapor (ppm)
2-4		7 4 8 6	✓	2'-3'- Limestone Fill 3'-3'2" Asphalt 3'2'-3'10" Limestone Fill solitic	✓	✓	✓	17:45 17:55 3ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin & Alex

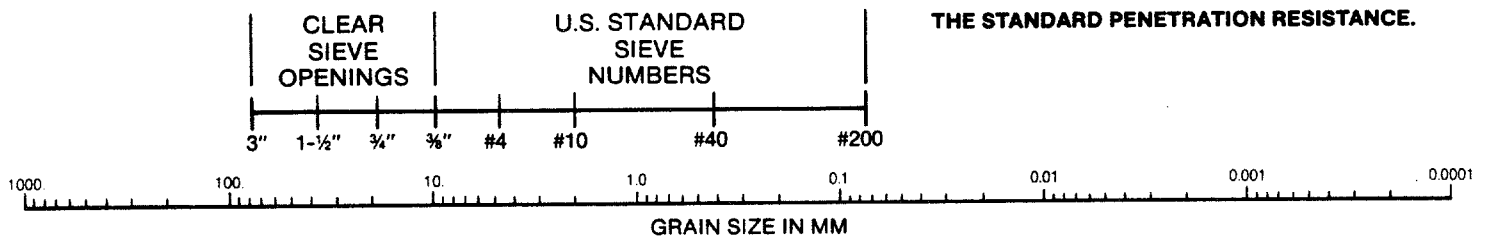
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site 9</u>	
BORING NUMBER: <u>B-30</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>6.4'</u>		GWL: Depth <u>3'4"</u> Date/Time <u>6/21/90-9:28</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration/Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
		9	N/A	2"- Top Soil	PT	N/A	N/A	Time
		17		1'10"- Limestone Fill	N/A			9:28
0-2	TOC	15						
	N/C	9						
	HEAD	10		Limestone Fill				
	SPACE	7		w/ shells				45ppm
	ANALYSIS	6						
2-4	N/A	4						
		7		Limestone Fill				
		6		w/ shells				10:00
4-6	✓	4	✓		✓	✓	✓	
		6		END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

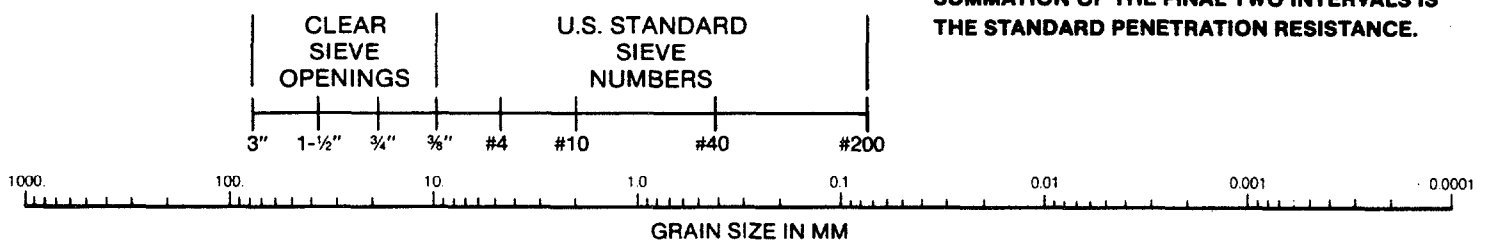
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Inves - Station 11C-19	
BORING NUMBER: B-29	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 6.1'	GWL: Depth 4' Date/Time 6/6/90-10:40	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test/Soil Boring	PAGE 1	OF 1

NOTES:

Drilling Contractor Drilling Solution

Drilling Equipment Ford F-700 Mobile Drill

Driller: Kevin & Alex

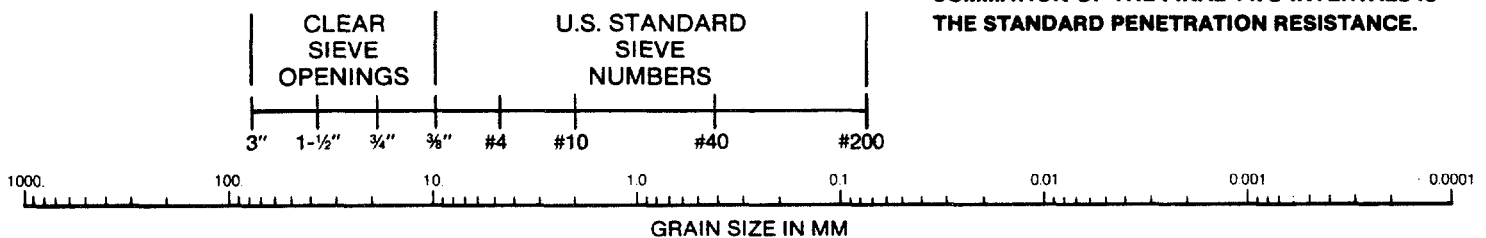
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation - Site #19	
BORING NUMBER: B-28	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 7.9'	GWL: Depth 5.5' Date/Time 6/6/90 - 10:30	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	10	N/A	0-1'- Top Soil	PT	N/A	N/A	Time Organic vapor (ppm)
0-2		8		1'-2'- Limestone Fill	N/A			10:30 Oppm
		11						
		12						
		10		Limestone Fill w/ Asphalt				Oppm
		6						
2-4		5						
		3						
	HEAD SPACE ANALYSIS	8		Limestone Fill, silty				10:35 Oppm
		8						
4-6		7						
		5						
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

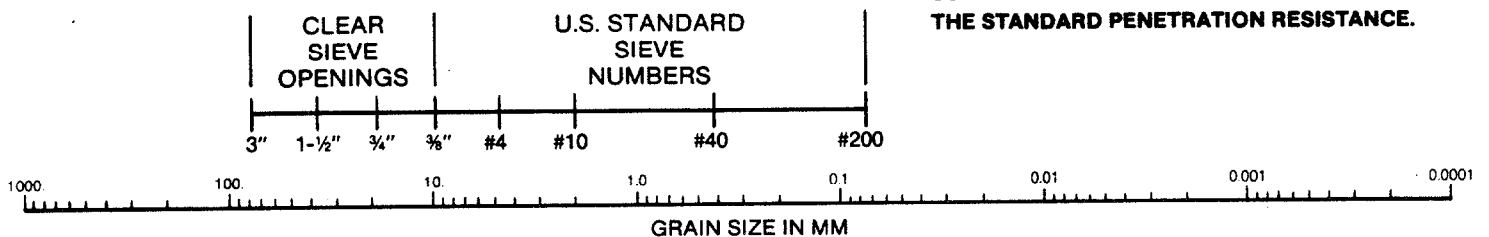
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site # 9	
BORING NUMBER: B-27	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 6.7'	GWL: Depth 5'7" Date/Time 6/6/90-10:05	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test/Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor (ppm) Time	
0-2	N/A 1	6 7 18 18	N/A	Oolitic Limestone Fill	N/A	N/A	N/A	10:05	0 ppm
2-4	✓	11 6 6 5		Limestone Fill w/ glass, oolitics					0 ppm
4-6	HEAD SPACE 2 INCHES	3 14 16 17	✓	4'-5'- Various Fill 5'-6'- Asphalt layer	✓	✓	✓	10:20	400 ppm
				END OF BORING					

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin & Alex

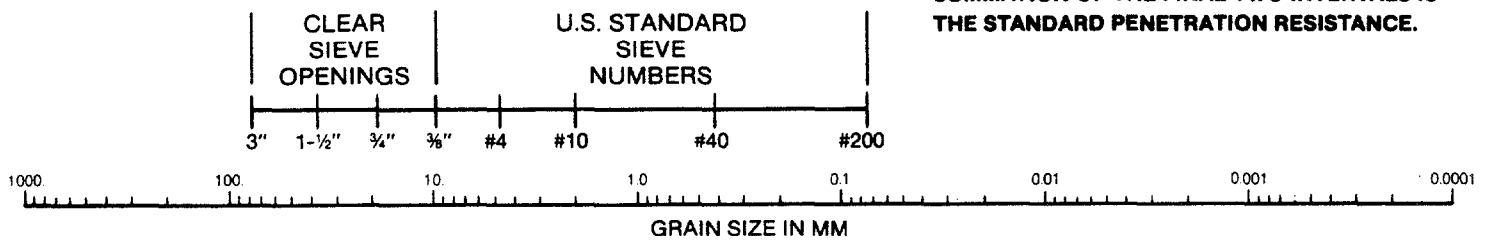
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site # 9	
BORING NUMBER: B-26	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 5.4'	GWL: Depth Date/Time 6/6/90-9:51	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Time Organic Vapor (ppm)
0-2	N/A ✓ HEAD SPACE ANALYSIS	14 13 10 10		0-1' - Top Soil	PT			9:51 0ppm
		3 1		1-2' - Top Soil mixed w/ Silty Limestone, shells	N/A			
2-4		2 2		2'-3' - Silty Limestone				9:53 0ppm
				3'-4' - Lime mud, clay, sand, silt				
				END of BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin & Alex

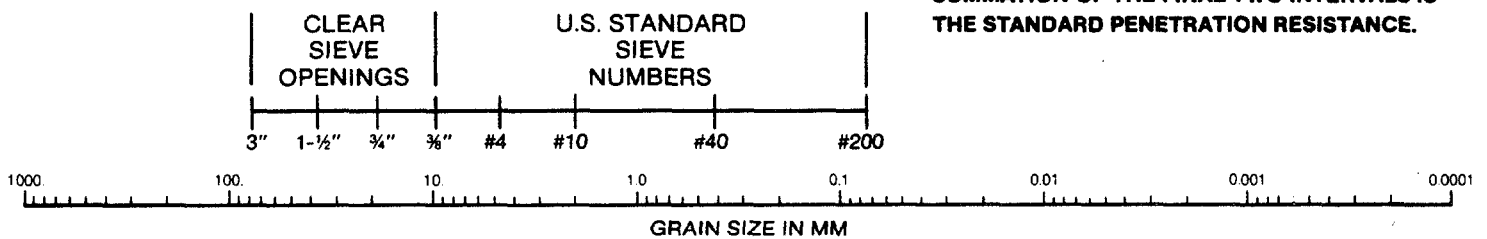
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
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DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation - Site #9	
BORING NUMBER: B-25	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 5.6'	GWL: Depth Date/Time 6/6/90-9:55	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test/Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor ppm
0-2	N/A	5	N/A	Top Soil	PT	N/A	N/A	Time 9:55 0ppm
2-4	HEAD SPACE ANALYSIS	4 2 1 1		Lime mud Clayey, sandy, silt	N/A			10:00 0ppm
				END of BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin + Alex

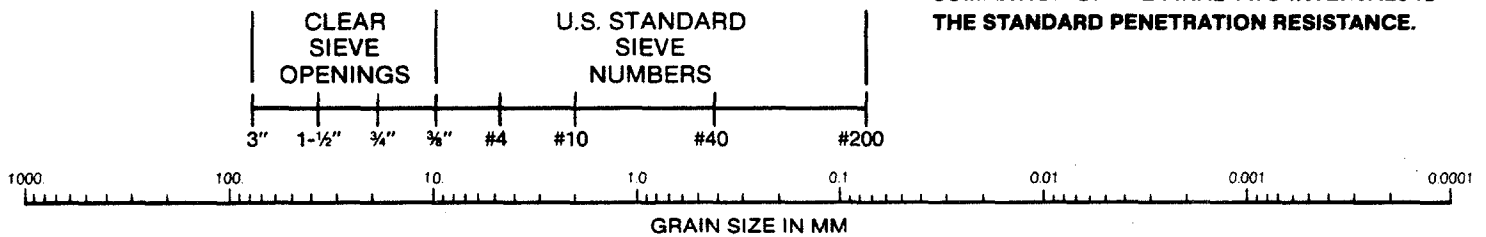
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site #9		
BORING NUMBER: B-24	COORDINATES: N/A	DATE: 6/21/90	
ELEVATION: 7.5'	GWL: Depth 4'	Date/Time 6/21/90-1225	DATE STARTED: 6/21/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/21/90
DRILLING METHODS: Standard Penetration Test/Soil Boring			PAGE 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor (ppm)
	N/A	25	N/A	1" - Top Soil	PT	N/A	N/A	Time
		50		11" - Loose limestone fill	N/A			
0-2		23		1' - Consolidated limestone fill				12:25
		17		w/whole shell				
	HEAD SPACE ANALYSIS	11		1' - Consolidated limestone fill				
		10		w/whole shell				
2-4		8		4" - Dark, limestone w/petroleum				12:35 3ppm
		6	V	8" - Lime Stone Fill, sand, mostly shell fragments				
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

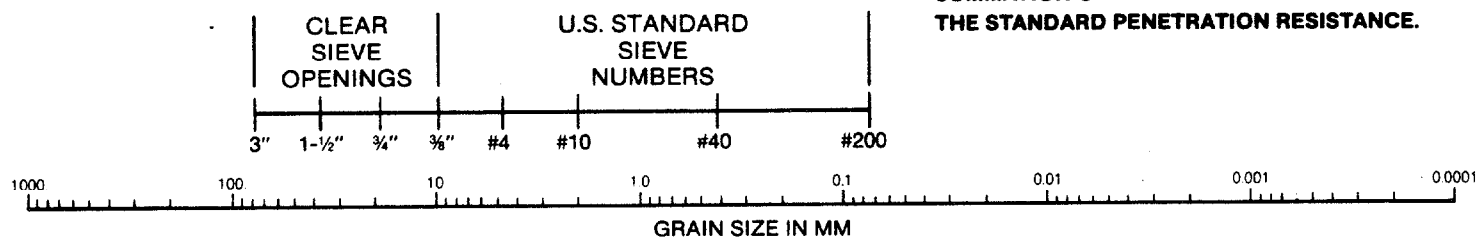
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation- Site #9		
BORING NUMBER: B-23	COORDINATES: N/A	DATE: 6/21/90	
ELEVATION: 8.2'	GWL: Depth 4'	Date/Time 6/21/90-12:15	DATE STARTED: 6/21/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A	Date/Time N/A	DATE COMPLETED: 6/21/90
DRILLING METHODS: Standard Penetration Test/Soil Borings			PAGE 1 OF 1

DEPTH (Ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS	
								Time	Organic Vapor (ppm)
	N/A	17	NA	1" - Top Soil	PT	N/A	NA		
		10		1' - Insoluble Limestone Fill	NA			12:15	
0-2		15		11" - Light Limestone fill					
		10		w/ shells					
	HEAD SPACE ANALYSIS	6							
		4		Light limestone Fill				12:25	3 ppm
2-4		3		w/ shell					
		2							
				END OF BORING					

NOTES:

Drilling Contractor Drilling Solution

Drilling Equipment Ford F-700 mobile Drill

Driller: Kevin & Alex

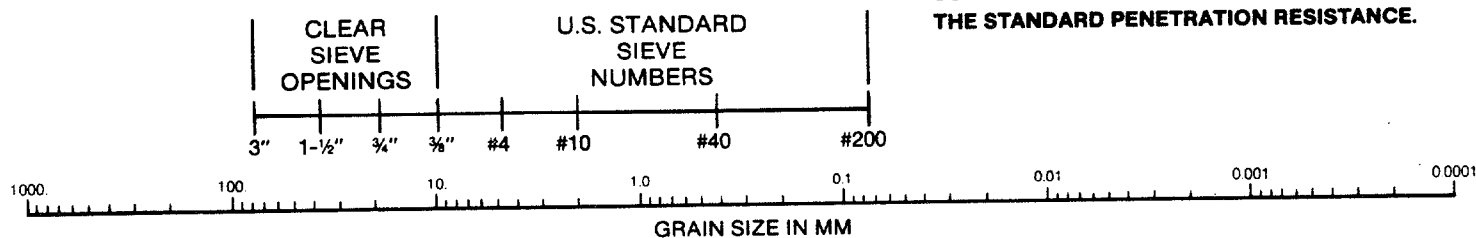
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Geological Investigation - Site #9	
BORING NUMBER: B-22	COORDINATES: N/A	DATE: 6/21/90
ELEVATION: 6.6'	GWL: Depth 4' Date/Time 6/21/90-12:00	DATE STARTED: 6/21/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/21/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	20	N/A	2" - Top Soil	PT	N/A	N/A	Organic Material Time
		23	↓	1'10" - Limestone fill, hard	N/A			12:00
0-2	↓	14		Sandy w/ shells				
	HEAD SPACE ANALYSIS	10						
		7		Limestone fill, hard				25
		7		Sandy w/ shells				PPM OVA
2-4		6			✓	✓	✓	12:10
		3	↓	END OF BORING				

NOTES:

Drilling Contractor Drilling Solutions

Drilling Equipment Ford F-700 mobile Drill

Driller: Kevin & Alex

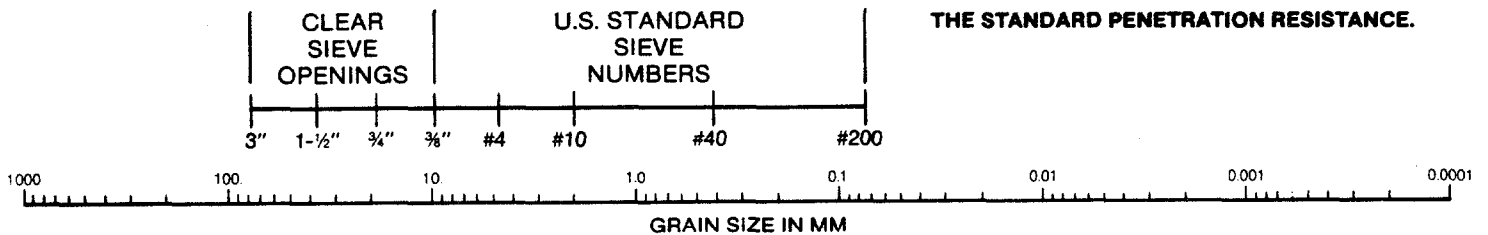
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
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VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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LOOSE	5 - 10
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

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	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: RedWest Remedial Investigation - Site # 9	
BORING NUMBER: B-21	COORDINATES: N/A	DATE: 6/21/90
ELEVATION: 6.7'	GWL: Depth 4' Date/Time 6/21/90-11:45	DATE STARTED: 6/21/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/21/90
DRILLING METHODS: Standard Penetration Test/Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	18 34 36 27	N/A	2" - Top Soil 10" - Limestone fill, loose 1'-2' - Harder limestone w/shells	PT N/A			Time Organic Vapors (ppm)
0-2	HEAD SPACE ANALYSIS	24 12 8 5		Harder limestone w/shells				11:45 250 ppm OVA
2-4				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

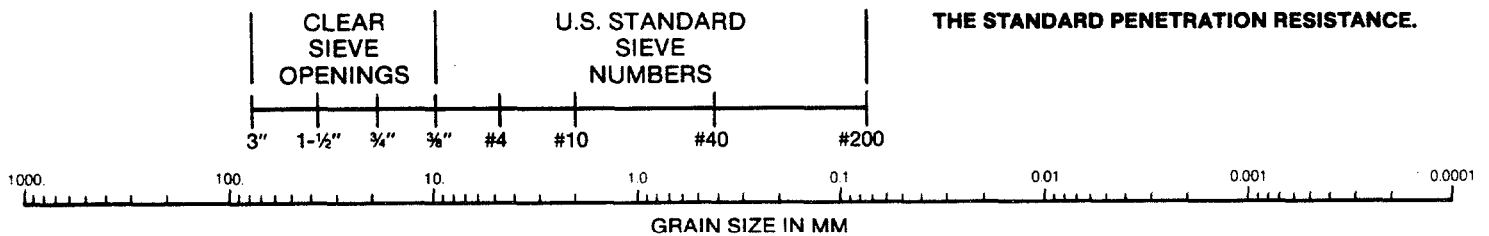
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SOFT	0.25 to 0.50
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

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SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
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SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-20</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>6.5'</u>	GWL: Depth <u>3.5'</u> Date/Time <u>6/21/90-10:36</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (Ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	21	N/A	2" - Top Soil	PT			Organic Time Vap (ppm)
0-2	↓	14 10 15		1'10" - Limestone Fill				10:36
2-4	HEAVY SPARE ANALYSIS	14 5 3 3	↓	Limestone F. // w/ shells	↓	↓	↓	1200 10:45 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

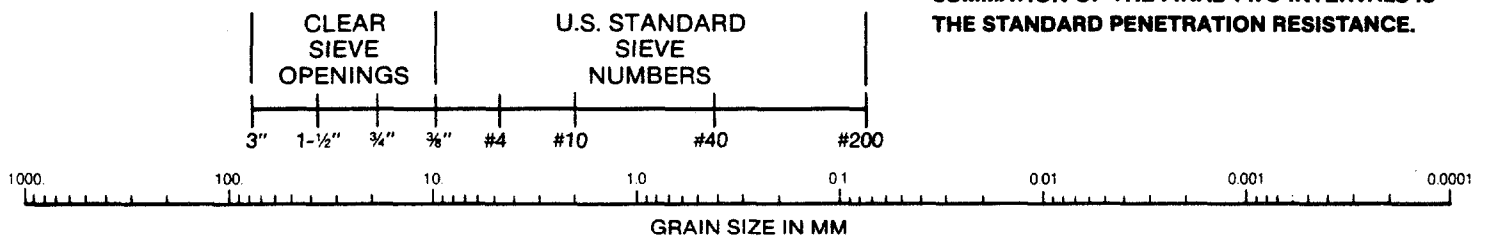
CONSISTENCY OF COHESIVE SOILS

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VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
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VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation Site #9</u>	
BORING NUMBER: <u>B-19</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>7.8'</u>		GWL: Depth <u>5.5'</u> Date/Time <u>6/21/90-10:10</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	<u>N/A</u>	<u>8</u>	<u>N/A</u>	<u>2"-Top Soil</u>	<u>PT</u>	<u>N/A</u>	<u>N/A</u>	<u>Time</u>
		<u>7</u>		<u>1'10"-Limestone Fill</u>	<u>N/A</u>			<u>10:10</u>
<u>6-2</u>		<u>8</u>						
		<u>9</u>						
		<u>7</u>		<u>2'-3'-Limestone Fill</u>				
		<u>5</u>		<u>3'-4'-Limestone Fill</u>				
<u>2-4</u>	<u>✓</u>	<u>5</u>		<u>Silty, sandy</u>				
	<u>HEAD</u>	<u>7</u>		<u>Limestone Fill</u>				
	<u>SPACE</u>	<u>5</u>		<u>Silty, sandy</u>				<u>10:20</u>
	<u>ANALYSIS</u>	<u>4</u>		<u>Whole shells</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>280</u>
<u>4-6</u>		<u>3</u>	<u>✓</u>					<u>ppm</u>
				<u>END OF BORING</u>				<u>0.1</u>

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

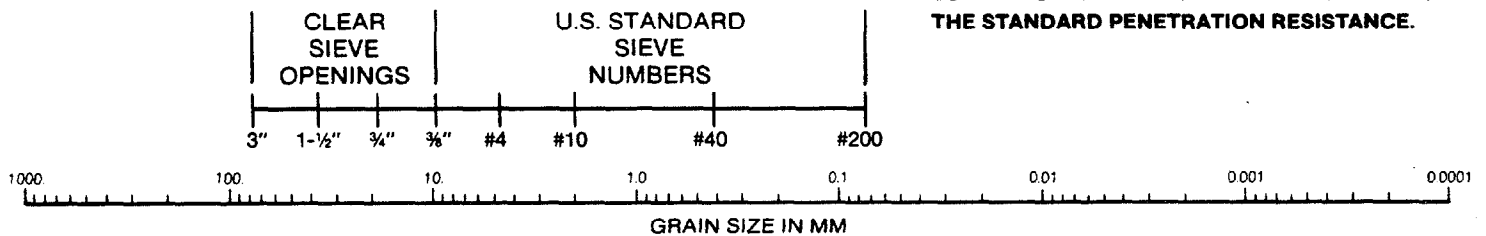
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-18</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>
ELEVATION: <u>8.1'</u>	GWL: Depth <u>5'</u> Date/Time <u>5/30/90 - 18:30</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>C. Callagari</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/30/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	3	N/A	Limestone Fill	N/A	N/A	N/A	Organic
		5		Gravel, coal				Time
0-2		6						18:30
		10						
		9		Limestone Fill				
		5		Gravel, coal				
2-4		4						
		8						
	HEAD SPACE ANNULUS	5		Lime mud, clay,				
		2		Sand w/ minor shell				18:35
4-6		1		Fine grained sand, moderately				2,800 ppm
		3		sorted				OVA
				End of Boring				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Seamco 2800
 Driller: Ed & Mike

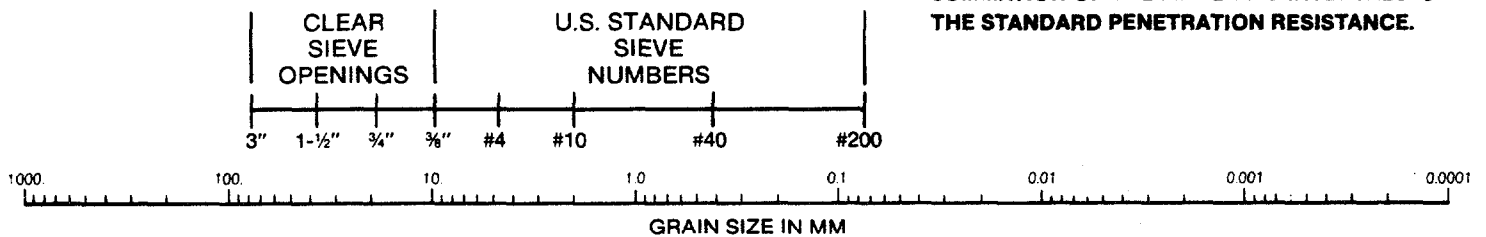
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation Site #9</u>	
BORING NUMBER: <u>B-17</u>		COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>
ELEVATION: <u>7.0'</u>	GWL: Depth <u>6'</u>	Date/Time <u>5/30/90-18:05</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>C. Callagari</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/30/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	5 5 5 11	N/A	Limestone F. II	N/A	N/A	N/A	Time Organic vapor (ppm) 18:05
2-4	✓	36 13 25 24		miami Oolite Sand, clay, + limestone mix				
4-6	HEAD SPACE ANALYSIS	14 10 9 8	✓	Limestone	✓	✓	✓	18:12 2,200 PPM OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Seamco 2800
 Driller: Ed + Mike

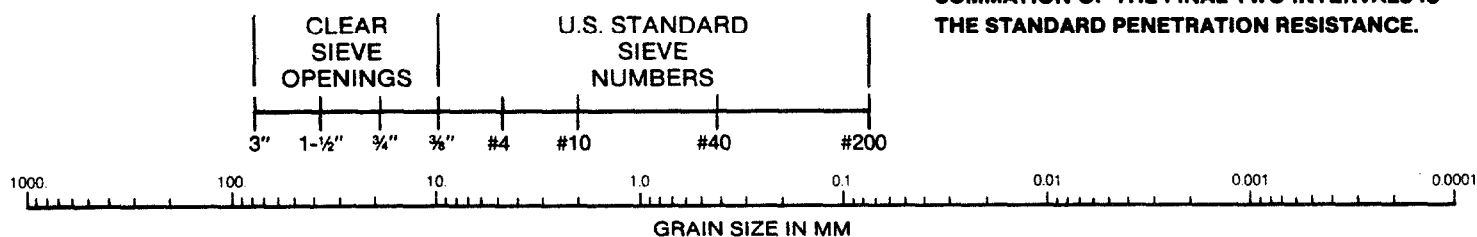
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation Site #9</u>		
BORING NUMBER: <u>B-16</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/30/90</u>	
ELEVATION: <u>8.0'</u>	GWL: Depth <u>6'</u>	Date/Time <u>5/30/90 - 17:50</u>	DATE STARTED: <u>5/30/90</u>
ENGINEER/GEOLOGIST: <u>C. Callagari</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>5/30/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	4 6 6 6	N/A	Limestone + Gravel Fill	N/A	N/A	N/A	Organic Time Vapor (ppm) 17:50
2-4		14 12 24 13		2'-3' - Limestone + Gravel Fill 3'-4' - Soft Limestone, shell Lime mud				
4-6		10 6 4 6		Lime mud				
6-8	✓ HEAD SPACE ANALYSIS	3 2 1 1	✓	Lime mud	✓	✓	✓	17:55 2700 ppm O.V.A.
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Ed + Mike

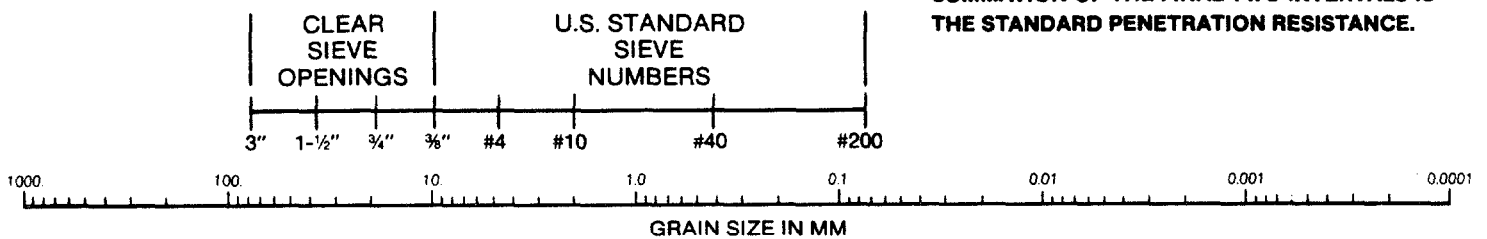
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595-392	PROJECT NAME: Key West Remedial Investigation Site #9	
BORING NUMBER: B-15	COORDINATES: N/A	DATE: 5/30/90
ELEVATION: 8.9'	GWL: Depth 8' Date/Time 5/30/90-17:15	DATE STARTED: 5/30/90
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Time N/A	DATE COMPLETED: 5/30/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	4 10 11 16	N/A	Mixed fill of Limestone and crushed Blue Stone	N/A	N/A	N/A	Time 17:15
2-4		28 13 8 4		Mixed fill of Limestone and crushed Blue Stone				
4-6		3 2 4 5		Mixed fill of Limestone and crushed Blue Stone				
6-8	HEAD SPACE ANALYSIS	2 2 4 4		Gravelly sand, not concentrated 2-5mm	✓	✓	✓	17:20 3,500 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Semco 2800
 Driller: Mike & Ed

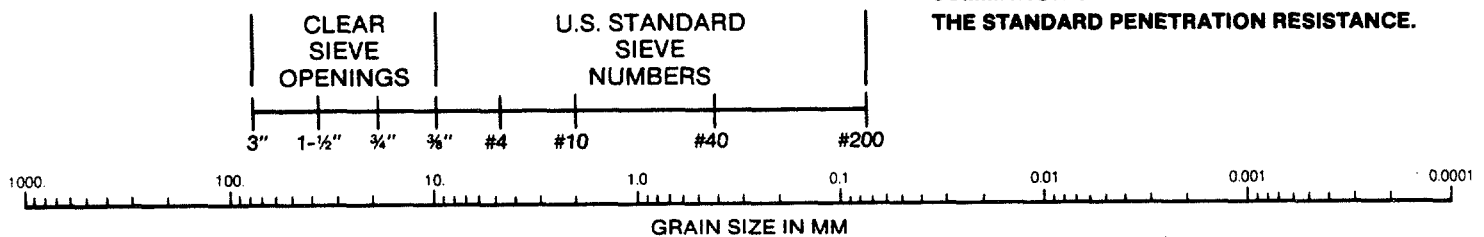
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595-392	PROJECT NAME: Key West Remedial Investigation Site #9		
BORING NUMBER: B-14	COORDINATES: 19.2		DATE: 5/30/90
ELEVATION: 8.1	GWL: Depth 6	Date/Time 5/30/90	DATE STARTED: 5/30/90
ENGINEER/GEOLOGIST: C. Calagari	Depth N/A	Date/Time N/A	DATE COMPLETED: 5/30/90
DRILLING METHODS: Standard Penetration Test / Soil Boring			PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	6 7 10 14	N/A	Limestone fill	N/A	N/A	N/A	Time 14:40 Organic Vapor (ppm)
2-4		6 7 8 7		Limestone fill				
4-6	✓ HEAD SPACE ANALYSIS	2 2 2 1		Lime mud w/ crushed shell Miner sand Swampy odor				
6-8		1	✓	Lime mud Light tan, brown	✓	✓	✓	14:46 1000 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Scanico 2800
Driller: Ed + Mike

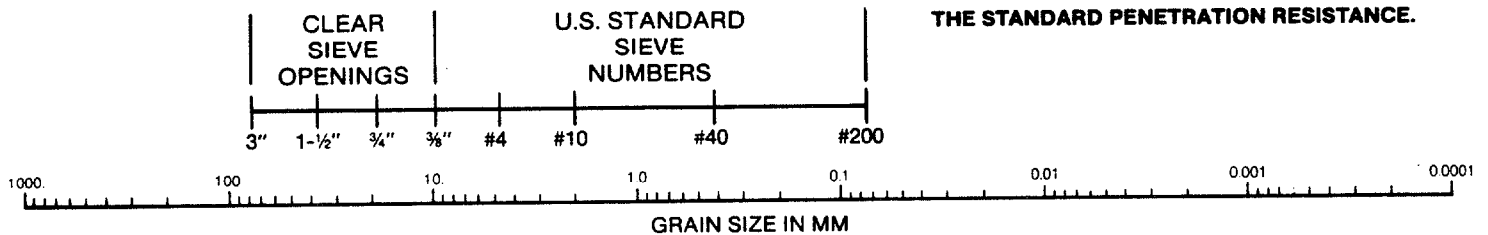
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation - Site 9	
BORING NUMBER: B-13	COORDINATES: N/A	DATE: 5/30/90
ELEVATION: 6.8'	GWL: Depth 5' Date/Time 5/30/90	DATE STARTED: 5/30/90
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Time N/A	DATE COMPLETED: 5/30/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	6 14 10 10	N/A	Limestone Fill	N/A	N/A	N/A	Time 14:05 Organic Vapor (ppm)
2-4	N/A	18 12 8 5	N/A	Limestone Fill				
4-6	HEAD SPACE ANALYSIS	5 4 4 4	N/A	Limestone w/ some lime mud Clay is gray Limestone white, chalky, cof-				14:11 250 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Seamco 2800
Driller: Ed + Mike

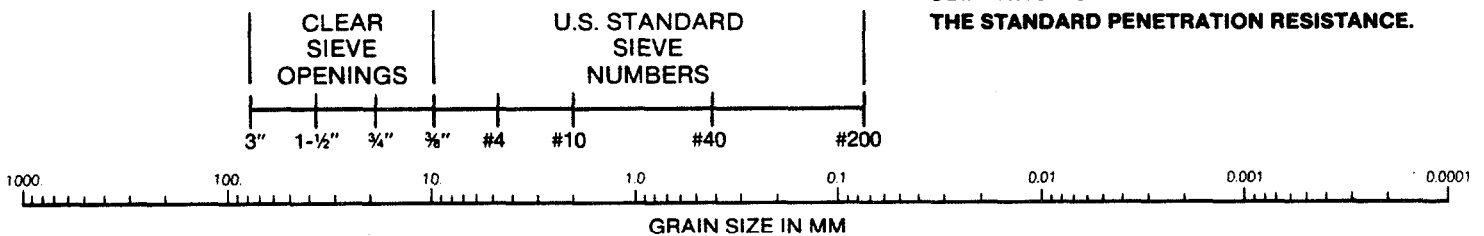
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation - Site 9	
BORING NUMBER: B-12	COORDINATES: N/A	DATE: 5/30/90
ELEVATION: 7'	GWL: Depth 4' Date/Time 5/30/90 - 15:30	DATE STARTED: 5/30/90
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Time N/A	DATE COMPLETED: 5/30/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	4 3 10	N/A	Limestone fill w/gravel	N/A	N/A	N/A	Time Organic vapor ppm 15:30
2-4	✓	5 4 4 4		Limestone fill w/gravel				
4-6	HEAD SPACE ANALYSIS	4 3 3 2	✓	Limestone fill w/gravel	✓	✓	✓	40ppm 15:35 OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Semco 2800
Driller: Mike & Ed

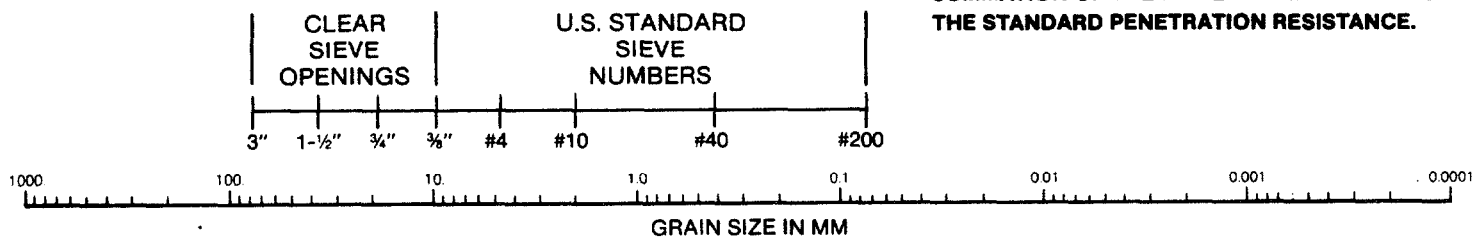
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation Site #9</u>	
BORING NUMBER: <u>B-11</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>7.3'</u>	GWL: Depth <u>4'</u> Date/Time <u>6/21/90-13:42</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	23	N/A	1"- Top Soil	ST	N/A	N/A	Organic vapor (ppm)
0-2	✓	22 11 11		1'11"- Limestone Fill, loose	N/A			Time 13:42
2-4	HEAD SPACE ANALYSIS	10 9 5 2	✓	Limestone Fill, loose				13:47 5000 PPM OVA
				END of BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

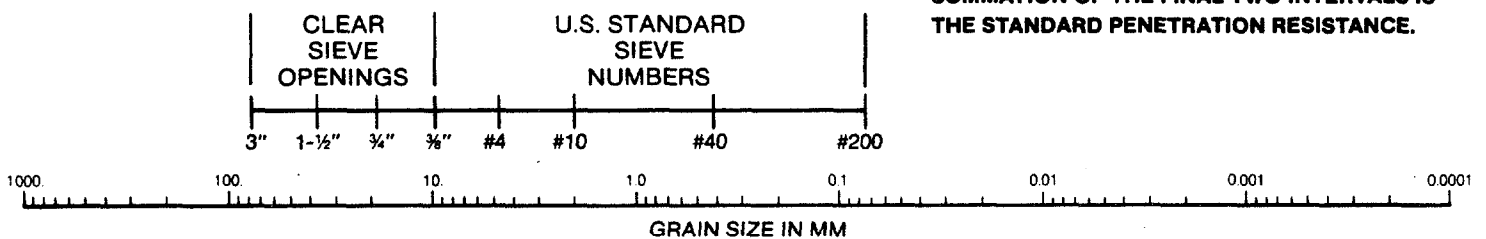
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-10</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>6.6'</u>		GWL: Depth <u>3.5'</u> Date/Time <u>6/21/90-13:31</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	15	N/A	1'-Top Soil	PT	N/A	N/A	Time
0-2	✓	21 20 17		1' 11" Limestone fill, loose w/ grass, coal, shell fragments	NA			13:31
	HEAD SPACE ANALYSIS	9 5 4 5		2'-3.5' Limestone fill, loose w/ grass, coal, shell fragments				13:38
2-4			✓	3.5'-4' Limestone fill silty	✓	✓	✓	3 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

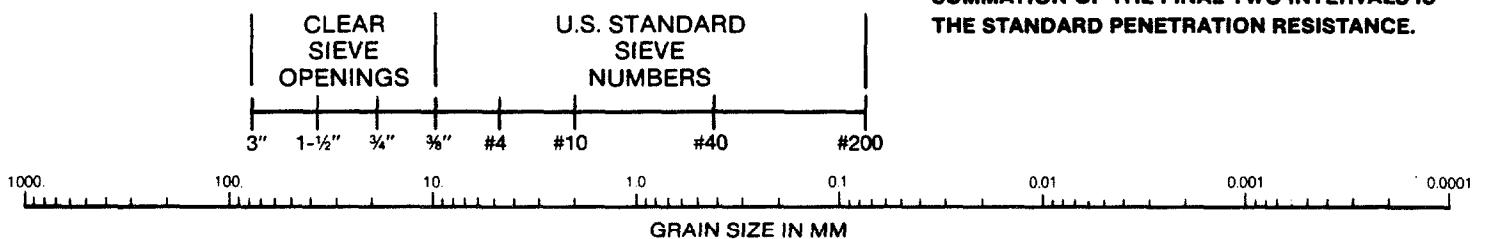
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation Site #9</u>	
BORING NUMBER: <u>B-9</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>7.7'</u>	GWL: Depth <u>4'</u> Date/Time <u>6/21/90-13:20</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor (ppm)
0-2	N/A	18 10 6 5	N/A	1"-Top Soil 11"-Limestone fill loose, dark 1"-Limestone fill dark, consol.	N/A	N/A	N/A	Time 13:20
2-4	HEAD SPACE ANALYSIS	5 9 6 2	↓	Limestone w/shell gravel, petroleum	✓	✓	✓	13:27 22 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Robert Lee

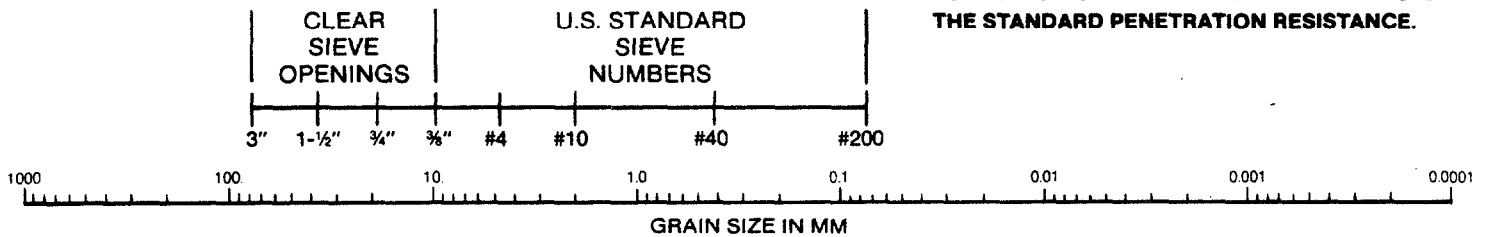
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-8</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/21/90</u>
ELEVATION: <u>6.8'</u>		GWL: Depth <u>3.5'</u> Date/Time <u>6/21/90 - 13:05</u>	DATE STARTED: <u>6/21/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/21/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	12	N/A	2" - Top Soil	PT	N/A	N/A	Organic
		10		1' - Limestone fill, loose	N/A			Vapor ppm
0-2	↓	12		10" - Limestone fill, tightly packed				Time
		8						13:05
	HEAD	6		2'-2.5' - Limestone fill,				
	SPACE	4		tightly packed				
	ANALYSIS	2		2.5' - 3' - Limestone, petroleum stain				3700
2-4		4	↓	1'2" - Limestone fill, silty	↓	↓	↓	ppm
								OVA
				END of BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin & Alex

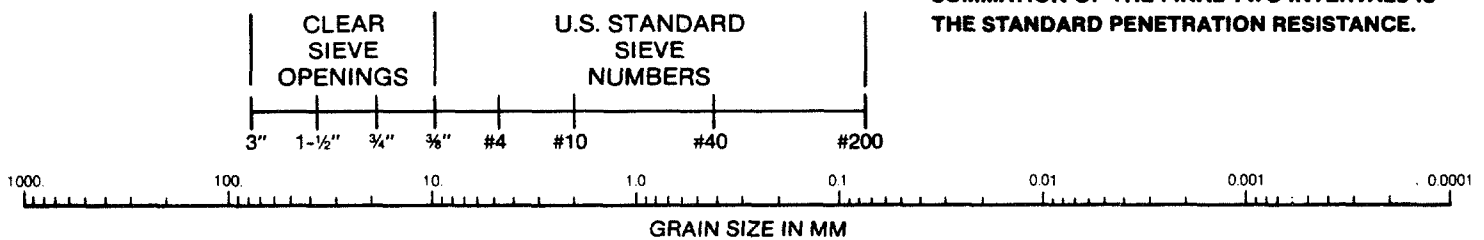
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595 392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-7</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>6.7</u>	GWL: Depth <u>5.5'</u>	Date/Time <u>6/6/90 - 17:39</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u>	Date/Time <u>N/A</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>		PAGE <u>2</u> OF <u>2</u>	

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	21	N/A		N/A	N/A	N/A	Organic Time vapors (ppm)
0-2		11		Limestone fill				17:39
		10						
		15						
		13		Limestone fill				
		8		Clay, sand				
2-4		6						
		5						
	HEAD	7		4'-5'10"-				
	SPACE	4		Limestone fill				17:45 5000 ppm
	ANALYSIS							0.02
4-6		2	✓	5'10"-6'- Saturated silty	✓	✓	✓	
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin & Alex

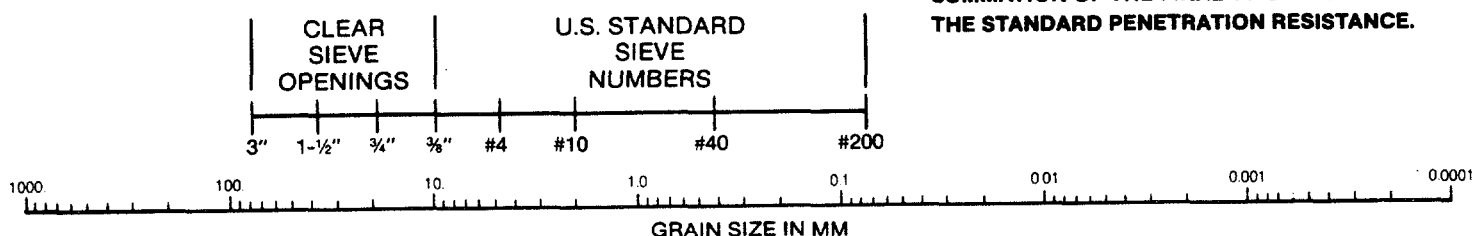
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: <u>Proctor Remedial Invest. m-17n-Site#9</u>	
BORING NUMBER: B-6	COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>7.5</u>	GWL: Depth <u>5.5</u> Date/Time <u>6/6/90-17:25</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. J. Johnson</u>	Depth <u>4.4</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	7	N/A	0-1'-Limestone fill w/ shell	st	st	st	Granitic Vasc. ppm, Time
		18		Dark				17:25
0-2		15		1'-2'-Limestone fill				
		10		Light				
		9		2'-3'-Limestone fill				
		5		Light				
2-4		4		3'-4'-Limestone fill				
		3		Dark, silty				
	HEAD SPACE ANALYSIS	4		Limestone, clayey				17:31 3000 ppm OVA
		3		Dark + silty				
4-6		2	V	End of Bore	V	V	V	

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 mobile Drill
Driller: Kevin & Alex

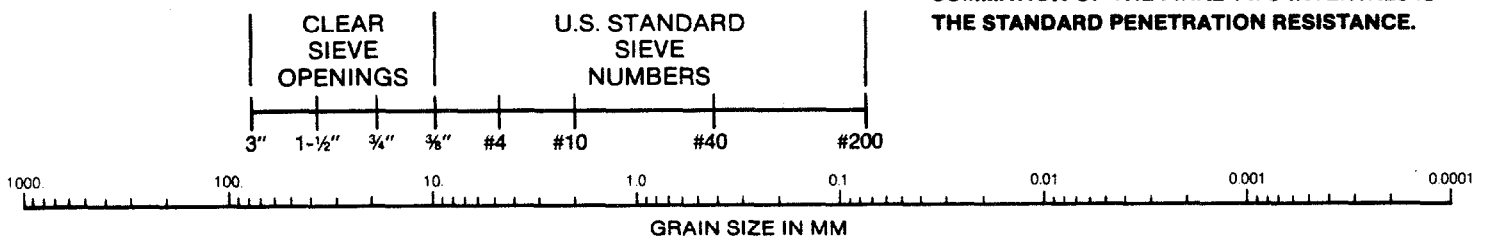
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>		
BORING NUMBER: <u>B-5</u>	COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>	
ELEVATION: <u>7.5'</u>	GWL: Depth <u>N/A</u> Date/Time <u>6/6/90-17:10</u>	DATE STARTED: <u>6/6/90</u>	
ENGINEER/GEOLOGIST: <u>G. Stephens</u>	Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>	
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE <u>1</u>	OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	8 7 7 5 4 3	N/A	Limestone, w/ shells Light	N/A	N/A	N/A	Time 17:10
2-4	✓	6 3		2'-3'- Limestone fill, light 3'-4'- Limestone fill, darker Clay, Sand, Silt				
4-6	HEAD SPACE ANALYSIS	1 1 1 1	✓	Limestone fill Slightly darker Clayey sand silt	✓	✓	✓	17:18 5000 DOM OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin & Alex

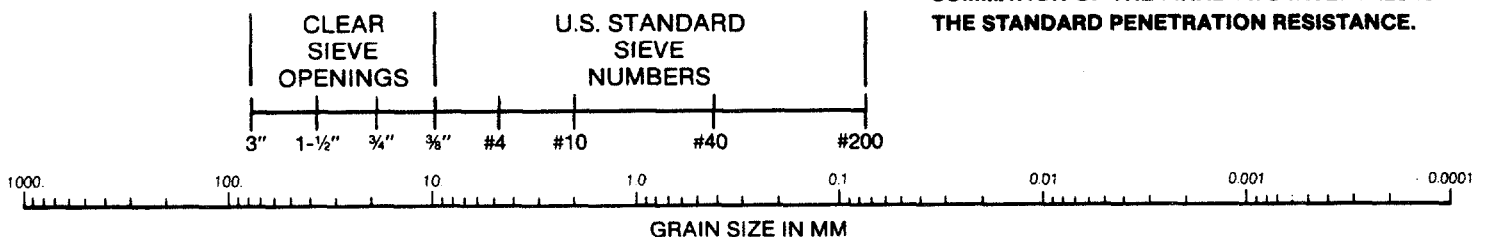
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595 392	PROJECT NAME: Key West Remedial Investigation - Site 9		
BORING NUMBER: B-4	COORDINATES: N/A	DATE: 6/6/90	
ELEVATION: 7.6'	GWL: Depth	Date/Time: 6/6/90 - 16:45	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth: N/A	Date/Time: N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test / Soil Boring			PAGE 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	18 15 10 10	N/A	Limestone Fill	N/A	N/A	N/A	Time 16:45 Organic Vapor (ppm)
2-4	✓	13 9 9 13		Limestone Fill				
4-6	HEAD SPACE ANALYSIS	4 2 1 2	✓	4'-5' Limestone Fill 5'-6' Limestone, silty, clayey	✓	✓	✓	16:50 3900 ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin & Alex

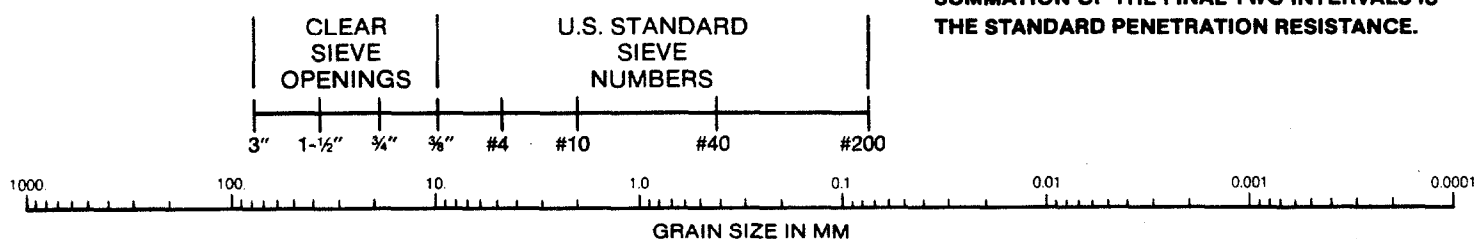
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation-Site #9</u>	
BORING NUMBER: <u>B-3</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>7.1'</u>		GWL: Depth <u>5.5'</u> Date/Time <u>6/6/90-16:25</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test/Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	15 10 8 11	N/A	Limestone Fill Silty	N/A	N/A	N/A	Organic Time Vapor (ppm) 16:25
2-4	↓ HEAD SPACE ANALYSIS	75 5 5 4 5 3 1 2		2'-3'- Oolitic Limestone 3'-4'- Sandy Silt Slightly clayey 4'-5'- Sandy Silt 5'-6'- Saturated Silt				16:32 4000 ppm
4-6			↓	END OF BORING	↓	↓	↓	

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

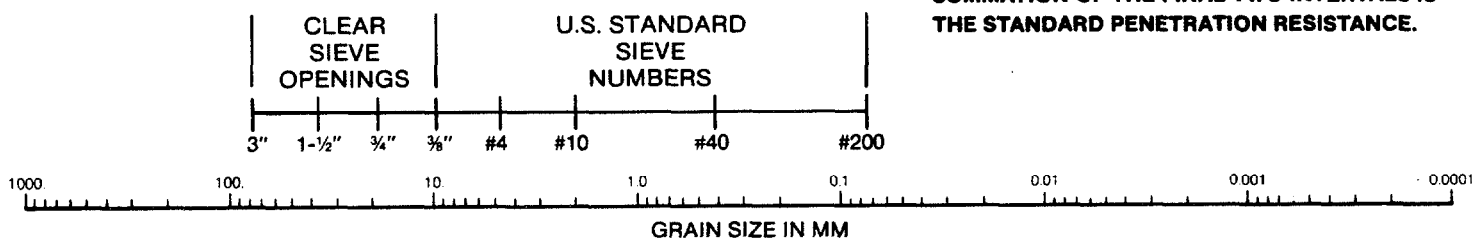
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

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GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

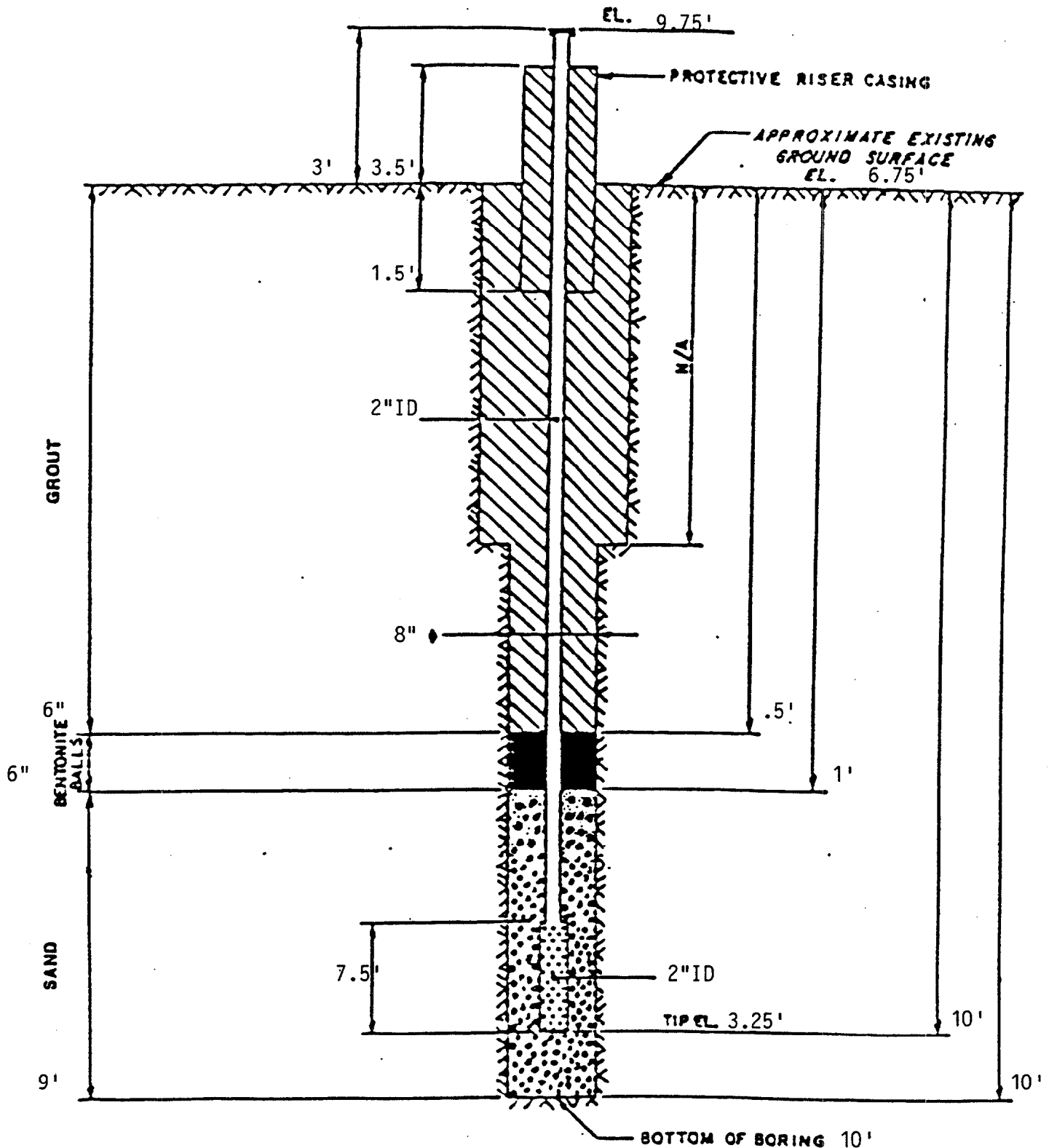
FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



Key West Remedial

INSTALLED BY C. Callegar DATE 5/31/90
CHECKED BY G. Stephens DATE 6/20/90



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site #9</u>	
BORING NUMBER: <u>B-2</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>6.9'</u>		GWL: Depth <u>2.4</u> Date/Time <u>6/6/90-16:05</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor ppm
0-2	N/A	17 13 12 6	N/A	0-1'- Limestone fill 1'-1.5'- Dark brown silt 1.5'-2'- Limestone fill	N/A	N/A	N/A	Time 16:05
2-4	↓	7 5 5 4		Limestone fill oolitic, wet				
4-6	HEAD SPACE ANALYSIS	4 3 3 1	↓	Limestone fill oolitic, wet	↓	↓	↓	16:10 5000 ppm
				END of BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 mobile Drill
 Driller: Kevin + Alex

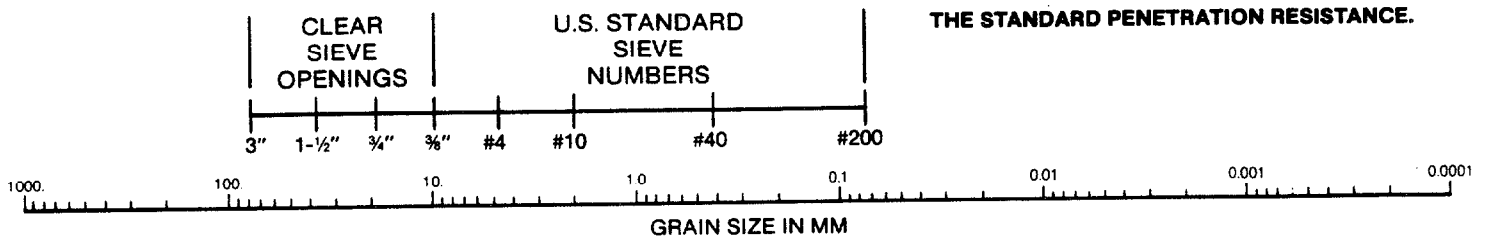
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
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HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

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GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial Investigation Site #9	
BORING NUMBER: B-1	COORDINATES: N/A	DATE: 6/6/90
ELEVATION: 7.0'	GWL: Depth 5' Date/Time 6/6/90-15:45	DATE STARTED: 6/6/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time N/A	DATE COMPLETED: 6/6/90
DRILLING METHODS: Standard Penetration Test / Soil Boring		PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	11 12 11 8	N/A	Limestone Fill w/ Shells	N/A	N/A	N/A	Time Organic Vapor (ppm)
2-4		7 5 4 4		Limestone Fill w/ Shells				15:45
4-6	HEAD SPACE ANALYSIS	3 3 2 1		Limestone, Silty Strong odor				15:50 5000 PPM OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
Drilling Equipment Ford F-700 Mobile Drill
Driller: Kevin + Alex

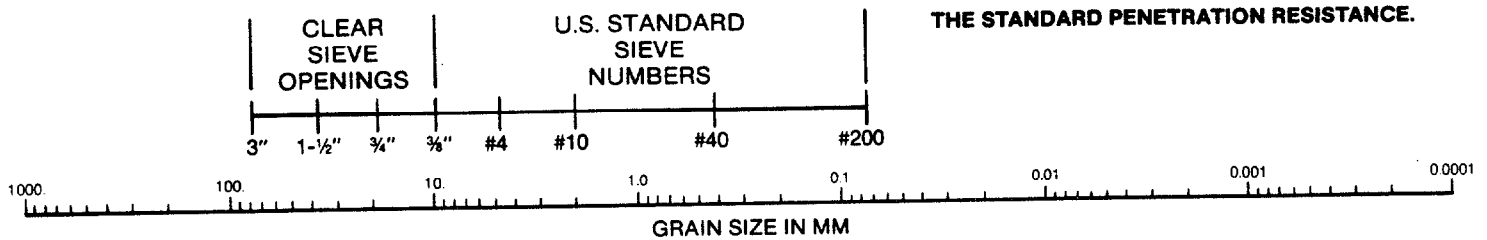
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
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DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
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⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. C. Callegari DATE 6/19/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW-6R DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: _____
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5'</u>
TOTAL PERFORATED AREA <u>7.5'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete Pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	3.0		9.75	
GROUND SURFACE	0.0		6.75	
BOTTOM OF PROTECTIVE PIPE	1.5		5.25	
BOREHOLE FILL MATERIALS:				
GROUT <u>Type I Cement</u>	TOP 0.0	BOTTOM 0.5'	TOP 6.75	BOTTOM 6.25
ASTM C150				
BENTONITE <u>3/8" Pellets</u>	TOP 0.5'	BOTTOM 1.0	TOP 6.25	BOTTOM 5.75
SAND <u>20/30 Silica,</u>	TOP 1.0	BOTTOM 10.0	TOP 5.75	BOTTOM -3.25
ASTM C775				
GRAVEL <u>N/A</u>	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 2.5	BOTTOM 10.0	TOP 4.25	BOTTOM -3.25
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	10.0		-3.25	
GWL AFTER INSTALLATION	N/A		N/A	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

REMARKS Well was developed until water was clear and sediment free. 9:15 AM. Recharge was slow, small "K" value approximately 30 gallons. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



**INTERNATIONAL
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CORPORATION**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595392	PROJECT NAME: KeyWest Remedial Investigation - Site: 9
BORING NUMBER: MW-6R	COORDINATES: N/A
ELEVATION: 9.75	GWL: Depth 3' Date/Time 5/31/90-8:30
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Time N/A
DRILLING METHODS: Hollow Stem Auger / Split Spoon	PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	4	N/A	0-2'- Limestone fill gravel + sand	N/A	N/A	N/A	8:25
2-3	Head Space Analysis	6		2-3'- Limestone fill gravel + sand				10 ppm
3-4	N/A	4		3-4'- Limestone fill gravel + sand				10 ppm
4-6		3		Limestone fill coarse grained / 100%				9:00
6-8		3		Limestone fill coarse grained / 100%				17 ppm
8-10		4		Limestone fill coarse grained / 100%				
				End of Boring				

NOTES:

Drilling Contractor Drilling Solutions

Drilling Equipment Ford-F-700 mobile Drill

Driller: Mike + Ed

NOTE: Bentonite liners added
and allowed to hydrate

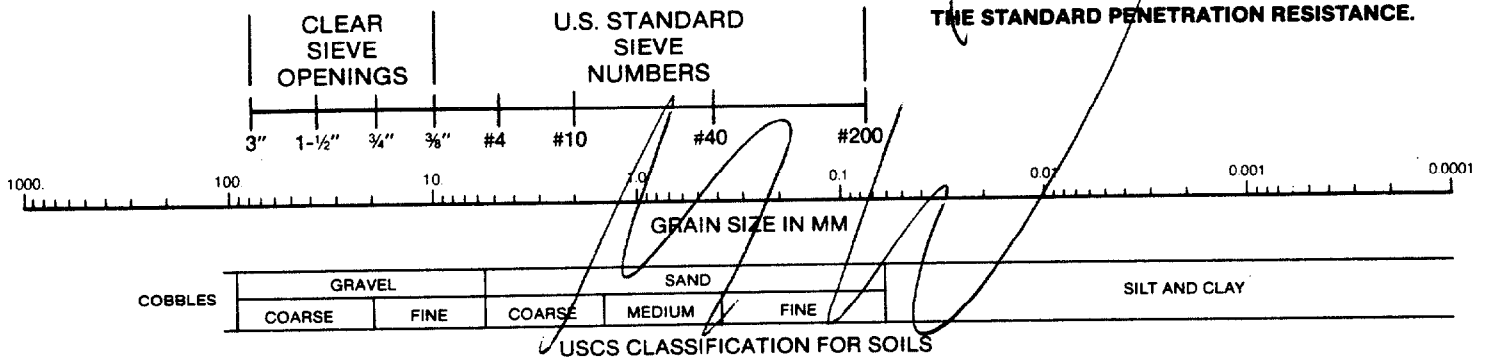
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEOC. Callegari DATE 5/31/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 6/20/90
BORING NO. MW9-12
DATE OF INSTALLATION 5/31/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480 and D170</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>5'</u>
TOTAL PERFORATED AREA <u>7.5'</u>	JOINING METHOD <u>Flush threaded with "O" rings to seal joint.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.)		ELEVATION (MSL)	
TOP OF RISER PIPE	2.8		9.56	
GROUND SURFACE	0.0		6.56	
BOTTOM OF PROTECTIVE PIPE	1.5		5.06	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	.5
	TOP	.5	TOP	6.56
	TOP	1.0	BOTTOM	6.06
	TOP	1.0	TOP	5.56
PERFORATED SECTION	TOP	2.5	BOTTOM	10.0
PIEZOMETER TIP	TOP	N/A	TOP	N/A
BOTTOM OF BOREHOLE	TOP	10.0	BOTTOM	N/A
GWL AFTER INSTALLATION	TOP	N/A	TOP	4.06
	TOP	N/A	BOTTOM	-3.44

IS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

REMARKS After installation the well was developed until it produced silt and sediment free water, approximately 25 gallons pumped by centrifugal pump. Developed 5/31/90 at 12:45 P.M. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>Key West Remedial Investigation - Dr-19</u>		
BORING NUMBER: <u>mw 9-12</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/31/90</u>	
ELEVATION: <u>9.00</u>	GWL: Depth <u>5'5"</u>	Date/Time <u>5/31/90-12:35</u>	DATE STARTED: <u>5/31/90</u>
ENGINEER/GEOLOGIST: <u>C. Caleari</u>	Depth <u>N/A</u>	Date/Time	DATE COMPLETED: <u>5/31/90</u>
DRILLING METHODS: <u>Hollow Stem Auger / Split Spoon</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A	5	N/A	Limestone Fr. 1, Sand	N/A	N/A	N/A	Time
		5						Organic
		7		Lime mud				12:20
0-2		11						
		9		Limestone Fr. 1, Sand				
		10						
2-4		10		Lime mud				
		10						
	Head spoke Analysis	3		Limestone, very soft				
4-6		5		Lime mud, tan/gray				26ppm
		5						
6-8				Limestone, very soft				
				Lime mud, tan, silty				
				Lime mud, very soft				
8-10	✓		✓	Lime mud, very silty	✓	✓	✓	12:45 330
				Sulfur smell				4ppm
				End of Boring				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 mobile drill
 Driller: Mike & Ed

NOTE: Bentonite pellets used
 and allowed to separate

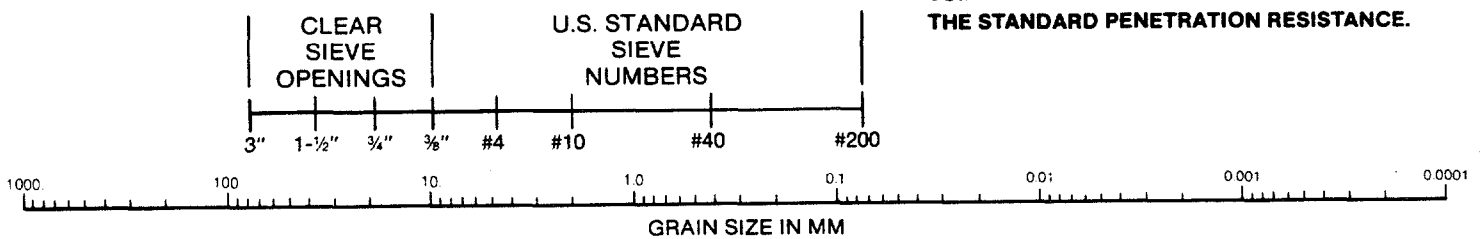
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Key West Remedial Investigation - Site 7</u>	
BORING NUMBER: <u>B-40</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/6/90</u>
ELEVATION: <u>7.20</u>		GWL: Depth <u>4.5</u> Date/Time <u>6/6/90-12:35</u>	DATE STARTED: <u>6/6/90</u>
ENGINEER/GEOLOGIST: <u>G. Stephens</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/6/90</u>
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	N/A	23 10 5 5	N/A	0-1' - Limestone fill 1-2' - Limestone fill w/shells, dark	N/A	N/A	N/A	Time Organic Vapor (ppm)
2-4	✓ Head Space Analysis	5 5 5 4 3 4 2 2		Limestone fill w/sand + shells, dark 4'-5' - Limestone fill w/sand + shells, dark 5'-6' - Limestone fill clayey, silty				12:35 12:40 0 ppm
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin + Alex

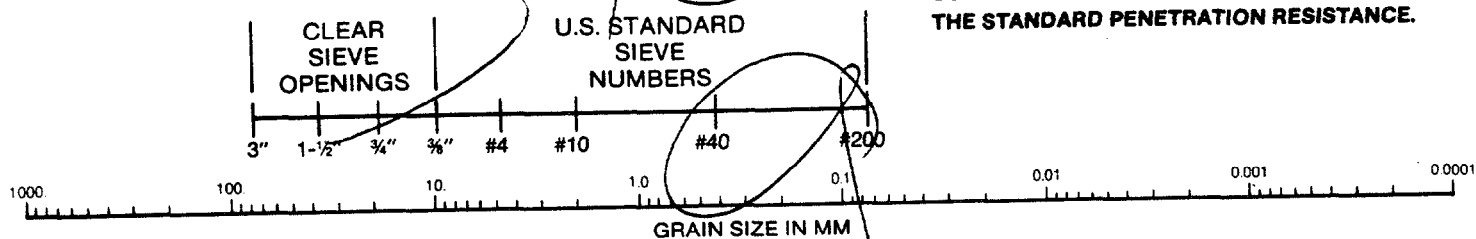
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ^(*)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

^(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Site 10
Boca Chica Fire Fighting Training Area

Well Construction Details
 Boca Chica
 Fire Fighting Training Area
 Site 10
 NAS Key West
 Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 10-1	06/04/90	3.86	3.56	11	10	2.56 TO -7.44	0.010	11	0.5	0.5
MW 10-2	06/04/90	3.36	3.03	11	10	2.03 TO -7.97	0.010	11	0.5	0.5
MW 10-3	06/04/90	3.63	3.3	11	10	2.30 TO -7.70	0.010	11	0.5	0.5



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER:	PROJECT NAME:	
BORING NUMBER:	COORDINATES:	DATE:
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:	PAGE OF	

DEPTH ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0		0		0' - 1' Hard, silty clay				0910
1		0		1' - 2' Hard, silty clay				
2		0		2' - 3' Hard, silty clay				
3		0		3' - 4' Hard, silty clay				
4		0		4' - 5' Hard, silty clay				
5		0		5' - 6' Hard, silty clay				
6		0		6' - 7' Hard, silty clay				
7		0		7' - 8' Hard, silty clay				
8		0		8' - 9' Hard, silty clay				
9		0		9' - 10' Hard, silty clay				
10		0		10' - 11' Hard, silty clay				
11		0		11' - 12' Hard, silty clay				
12		0		12' - 13' Hard, silty clay				
13		0		13' - 14' Hard, silty clay				
14		0		14' - 15' Hard, silty clay				
15		0		15' - 16' Hard, silty clay				
16		0		16' - 17' Hard, silty clay				
17		0		17' - 18' Hard, silty clay				
18		0		18' - 19' Hard, silty clay				
19		0		19' - 20' Hard, silty clay				
20		0		20' - 21' Hard, silty clay				
21		0		21' - 22' Hard, silty clay				
22		0		22' - 23' Hard, silty clay				
23		0		23' - 24' Hard, silty clay				
24		0		24' - 25' Hard, silty clay				
25		0		25' - 26' Hard, silty clay				
26		0		26' - 27' Hard, silty clay				
27		0		27' - 28' Hard, silty clay				
28		0		28' - 29' Hard, silty clay				
29		0		29' - 30' Hard, silty clay				
30		0		30' - 31' Hard, silty clay				
31		0		31' - 32' Hard, silty clay				
32		0		32' - 33' Hard, silty clay				
33		0		33' - 34' Hard, silty clay				
34		0		34' - 35' Hard, silty clay				
35		0		35' - 36' Hard, silty clay				
36		0		36' - 37' Hard, silty clay				
37		0		37' - 38' Hard, silty clay				
38		0		38' - 39' Hard, silty clay				
39		0		39' - 40' Hard, silty clay				
40		0		40' - 41' Hard, silty clay				
41		0		41' - 42' Hard, silty clay				
42		0		42' - 43' Hard, silty clay				
43		0		43' - 44' Hard, silty clay				
44		0		44' - 45' Hard, silty clay				
45		0		45' - 46' Hard, silty clay				
46		0		46' - 47' Hard, silty clay				
47		0		47' - 48' Hard, silty clay				
48		0		48' - 49' Hard, silty clay				
49		0		49' - 50' Hard, silty clay				
50		0		50' - 51' Hard, silty clay				
51		0		51' - 52' Hard, silty clay				
52		0		52' - 53' Hard, silty clay				
53		0		53' - 54' Hard, silty clay				
54		0		54' - 55' Hard, silty clay				
55		0		55' - 56' Hard, silty clay				
56								

NOTES:

Drilling Contractor

Drilling Equipment 177000

Driller: _____

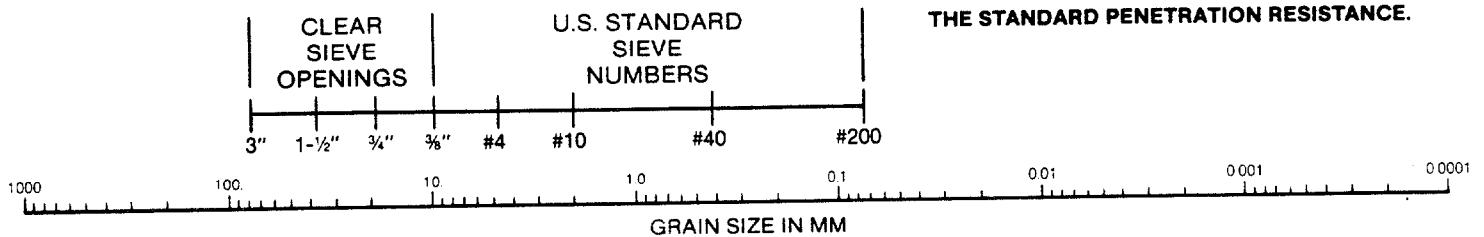
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
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	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. Kevin Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW10-1 DATE OF INSTALLATION 6/4/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow Stem Auger</u>	TYPE OF BIT <u>Rock Bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>
FLUID <u> </u> FROM <u> </u> TO <u> </u>	SIZE <u> </u> FROM <u> </u> TO <u> </u>

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch. 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: <u> </u> and <u>D170</u>
PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	O.D. <u>N/A</u> I.D. <u>2"</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	LENGTH OF PIPE SECTIONS <u>1'</u>
TOTAL PERFORATED AREA <u>10'</u>	JOINING METHOD <u>Flush Threaded with</u> <u>"O" rings to seal joints</u>

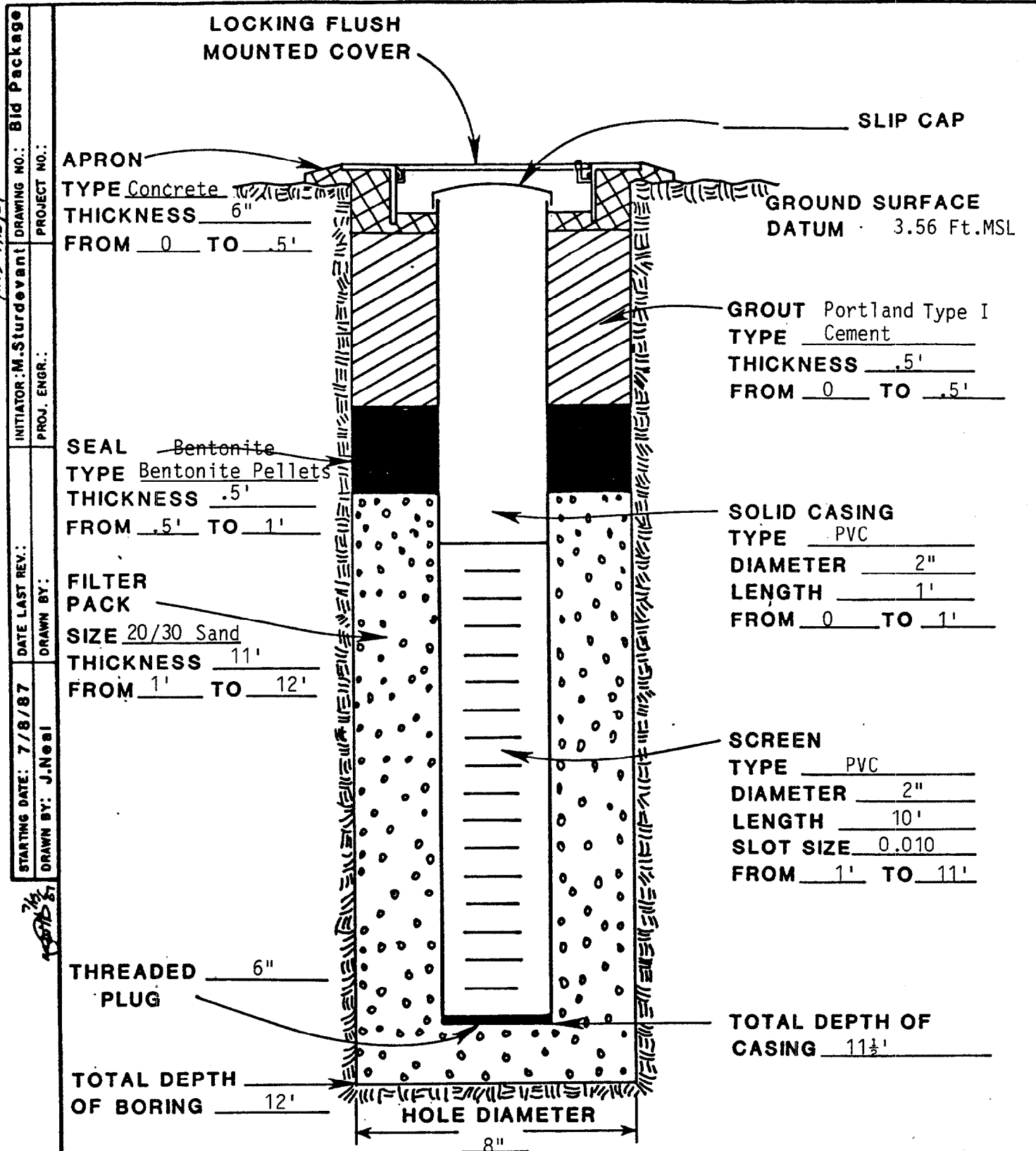
PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking Riser Cap</u>
PROTECTIVE PIPE O.D. <u>3 3/4"</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft)		ELEVATION (MSL)	
TOP OF RISER PIPE	.30		3.86	
GROUND SURFACE	0.0		3.56	
BOTTOM OF PROTECTIVE PIPE	.16		0.40	
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP	0.0	BOTTOM	0.5
	TOP	0.5	TOP	3.56
	TOP	1.0	BOTTOM	3.06
	TOP	12.0	TOP	3.06
PERFORATED SECTION	TOP	1.0	BOTTOM	2.56
PIEZOMETER TIP	TOP	N/A	TOP	2.56
BOTTOM OF BOREHOLE	TOP	N/A	BOTTOM	N/A
GWL AFTER INSTALLATION	TOP	11.0	TOP	N/A
	TOP	2.3	BOTTOM	N/A
			TOP	-8.44
			BOTTOM	1.2

3 THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

REMARKS Wells developed 6/6/90. Rapid development, quick color change from silty grey to clear sand free centrifugal pump, approximately 15 to 20 gallons. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.



Installed by: K. Dorsey Date: 6/4/90

Key West Remedial Investigation

Checked by: M. Hampton Date: 9/21/90

MW10-1

65360

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... Creating a Safer Tomorrow

"Do Not Scale This Drawing"



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER:	PROJECT NAME:		
BORING NUMBER:	COORDINATES:	DATE:	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS:			PAGE OF

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (5')	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	MC FPA 2	5	1/2	2. Limestone Fr. & sand	N/A	1/2	1/2	Time 10:00
0-2		6		2.5. Limestone Fr. & sand				10:20
	1/2	7						
		8						
		11						
		15						
		11						
2-4		9						
		10						
		14						
		12						
4-6		5		5-10. Limestone Fr. & sand				
		11						
		15						
		7		7-10. Limestone Fr. & sand				
		10		10-15. Limestone Fr. & sand				
		16		16-20. Limestone Fr. & sand				
		17		17-20. Limestone Fr. & sand				
		18		18-20. Limestone Fr. & sand				
		19		19-20. Limestone Fr. & sand				
		20		20-25. Limestone Fr. & sand				
		21		21-25. Limestone Fr. & sand				
		22		22-25. Limestone Fr. & sand				
		23		23-25. Limestone Fr. & sand				
		24		24-25. Limestone Fr. & sand				
		25		25-30. Limestone Fr. & sand				
		26		26-30. Limestone Fr. & sand				
		27		27-30. Limestone Fr. & sand				
		28		28-30. Limestone Fr. & sand				
		29		29-30. Limestone Fr. & sand				
		30		30-35. Limestone Fr. & sand				
		31		31-35. Limestone Fr. & sand				
		32		32-35. Limestone Fr. & sand				
		33		33-35. Limestone Fr. & sand				
		34		34-35. Limestone Fr. & sand				
		35		35-40. Limestone Fr. & sand				
		36		36-40. Limestone Fr. & sand				
		37		37-40. Limestone Fr. & sand				
		38		38-40. Limestone Fr. & sand				
		39		39-40. Limestone Fr. & sand				
		40		40-45. Limestone Fr. & sand				
		41		41-45. Limestone Fr. & sand				
		42		42-45. Limestone Fr. & sand				
		43		43-45. Limestone Fr. & sand				
		44		44-45. Limestone Fr. & sand				
		45		45-50. Limestone Fr. & sand				
		46		46-50. Limestone Fr. & sand				
		47		47-50. Limestone Fr. & sand				
		48		48-50. Limestone Fr. & sand				
		49		49-50. Limestone Fr. & sand				
		50		50-55. Limestone Fr. & sand				
		51		51-55. Limestone Fr. & sand				
		52		52-55. Limestone Fr. & sand				
		53		53-55. Limestone Fr. & sand				
		54		54-55. Limestone Fr. & sand				
		55		55-60. Limestone Fr. & sand				
		56		56-60. Limestone Fr. & sand				
		57		57-60. Limestone Fr. & sand				
		58		5				

NOTES:

Drilling Contractor D. J. ...

Drilling Equipment For 8 F-300 machine

Driller: Kayla and Noe

note: Reprints published
add'l and at a cost to
the author.

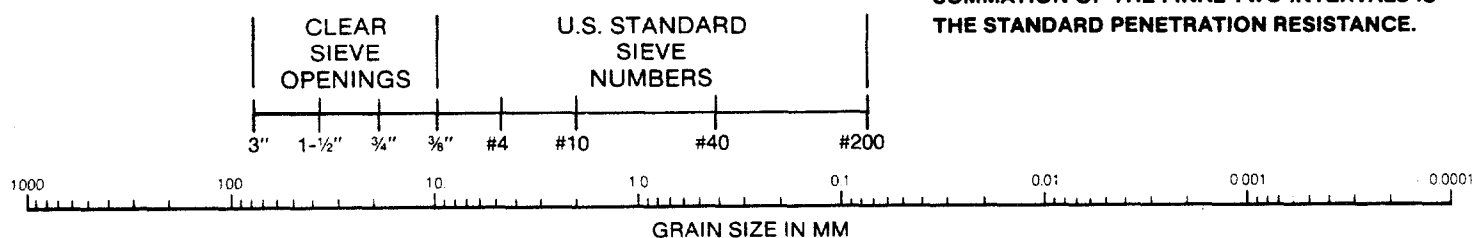
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedial Investigation FIELD ENG./GEO. K. Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 6/4/90
BORING NO. MW10-2

DATE OF INSTALLATION 6/4/90

BOREHOLE DRILLING

DRILLING METHOD <u>Hollow stem auger</u>	TYPE OF BIT <u>Rock bit</u>
DRILLING FLUID (S) USED: <u>N/A</u>	CASING SIZE (S) USED: <u>N/A</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

DESCRIPTION

TYPE <u>Sch. 40 PVC ASTM F480 and D170</u>	RISER PIPE MATERIAL <u>Sch 40 PVC ASTM F480</u>
DIAMETER OF PERFORATED SECTION <u>2"</u>	RISER PIPE DIAMETERS: _____ and <u>D170</u>
PERFORATION TYPE:	O.D. <u>N/A</u> I.D. <u>2"</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>1'</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>Flush threaded with "0"</u>
TOTAL PERFORATED AREA <u>10'</u>	<u>rings to seal joints.</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5'</u>	OTHER PROTECTION <u>Locking riser cap,</u>
PROTECTIVE PIPE O.D. <u>3 3/4'</u>	<u>Concrete pad 2'X2'X6" meets ASTM C150</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (Ft)		ELEVATION (MSL)	
TOP OF RISER PIPE	0.33		3.36	
GROUND SURFACE	0.0		3.03	
BOTTOM OF PROTECTIVE PIPE	0.16		2.86	
BOREHOLE FILL MATERIALS: GROUT <u>Type I Cement</u> <u>ASTM C150</u> BENTONITE <u>3/8" Pellets</u> SAND <u>20/30 Silica,</u> <u>ASTM C775</u> GRAVEL <u>N/A</u>	TOP	0.0	BOTTOM	0.5
	TOP	0.0	TOP	3.03
	BOTTOM	0.5	BOTTOM	2.53
	TOP	0.5	TOP	2.53
PERFORATED SECTION	TOP	1.0	BOTTOM	12.0
	TOP	1.0	TOP	2.03
	BOTTOM	12.0	BOTTOM	-7.97
PIEZOMETER TIP	TOP	N/A	TOP	N/A
BOTTOM OF BOREHOLE	TOP	N/A	BOTTOM	N/A
BOTTOM OF BOREHOLE	TOP	1.0	TOP	2.03
BOTTOM OF BOREHOLE	BOTTOM	11.0	BOTTOM	-7.97
BOTTOM OF BOREHOLE	12.0		-9.09	
BOTTOM OF BOREHOLE	2.3		0.7	

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

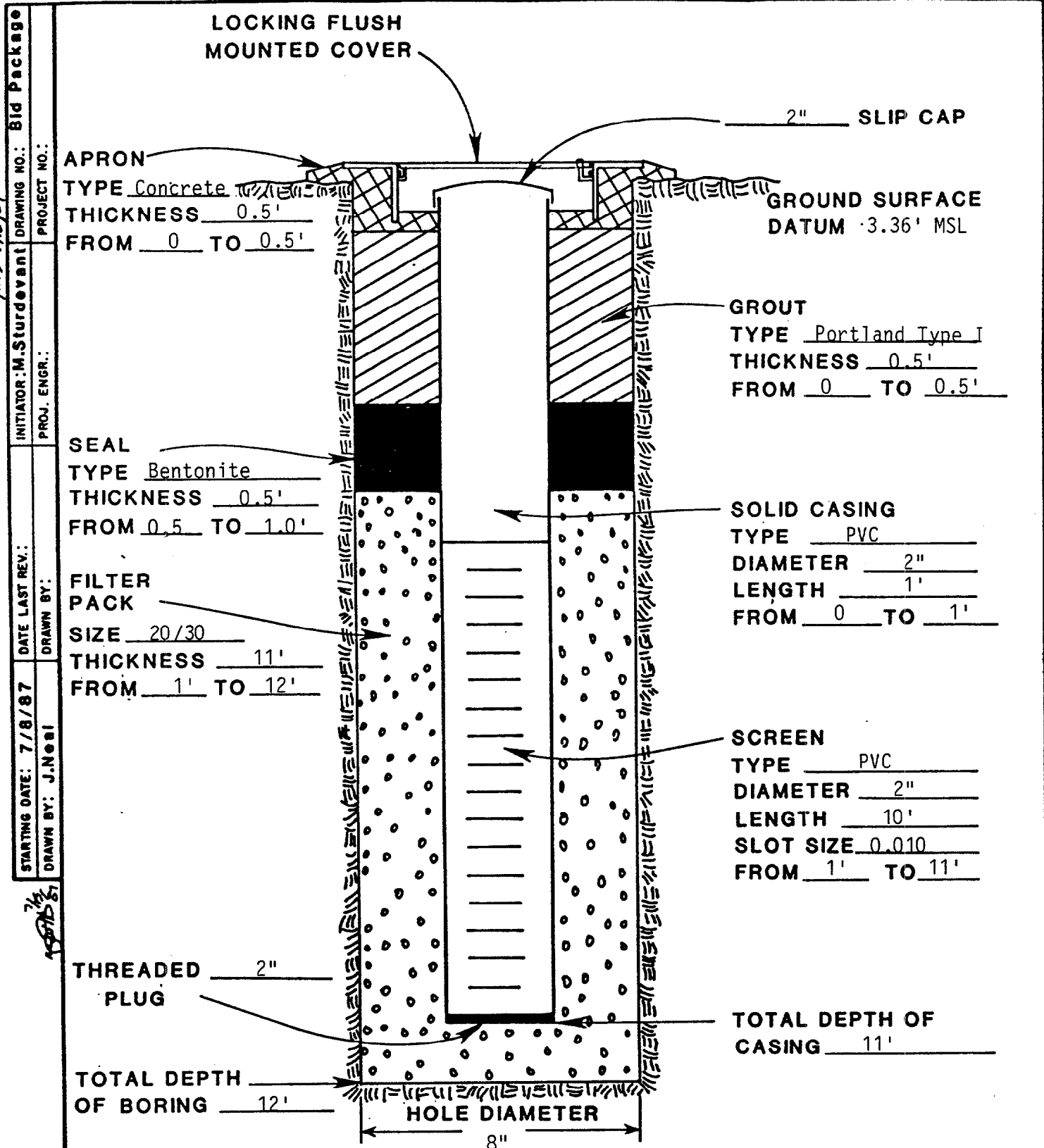
NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

REMARKS Wells were developed 6/6/90 producing clear, silt/sand free water. Approximately
20 gallons were pumped. Pump used was a 5 HP Briggs and Stratton centrifugal pump with
a flow rate of 1 to 2 gpm.

Installed by: K. Dorsey

Date: 6/4/90

MW10-2

Checked by: M. Hampton

Date: 9/21/90

Key West Remedial
Investigation

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>100-39</u>	PROJECT NAME: <u>K...</u>		
BORING NUMBER: <u>100-39</u>	COORDINATES: <u>...</u>	DATE: <u>...</u>	
ELEVATION: <u>3.25</u>	GWL: Depth <u>0.3</u>	Date/Time <u>...</u>	DATE STARTED: <u>...</u>
ENGINEER/GEOLOGIST: <u>...</u>	Depth <u>...</u>	Date/Time <u>...</u>	DATE COMPLETED: <u>...</u>
DRILLING METHODS: <u>...</u>			PAGE <u>...</u> OF <u>...</u>

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2		10	N/A	2' Black loam soil hard	N/A	10		10:20
2-4	FW-A-3	10		2-3' Dark silty clay 2.2-4' silty sand hard				
4-6	FW-A-4	10		4-5' silty sand hard				
6-8		10		6-7' silty sand hard				
8-10		10		8-9' silty sand hard				10:55

NOTES:

Drilling Contractor: ...

Drilling Equipment: ...

Driller: ...

Note: Borehole for
water table
hydrology.

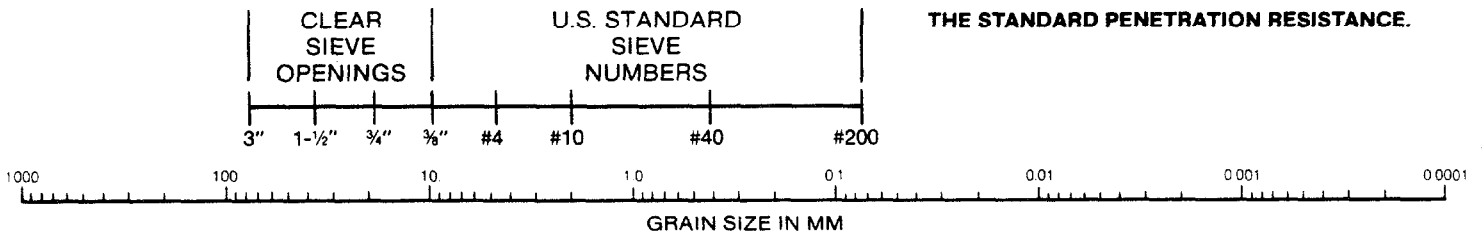
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

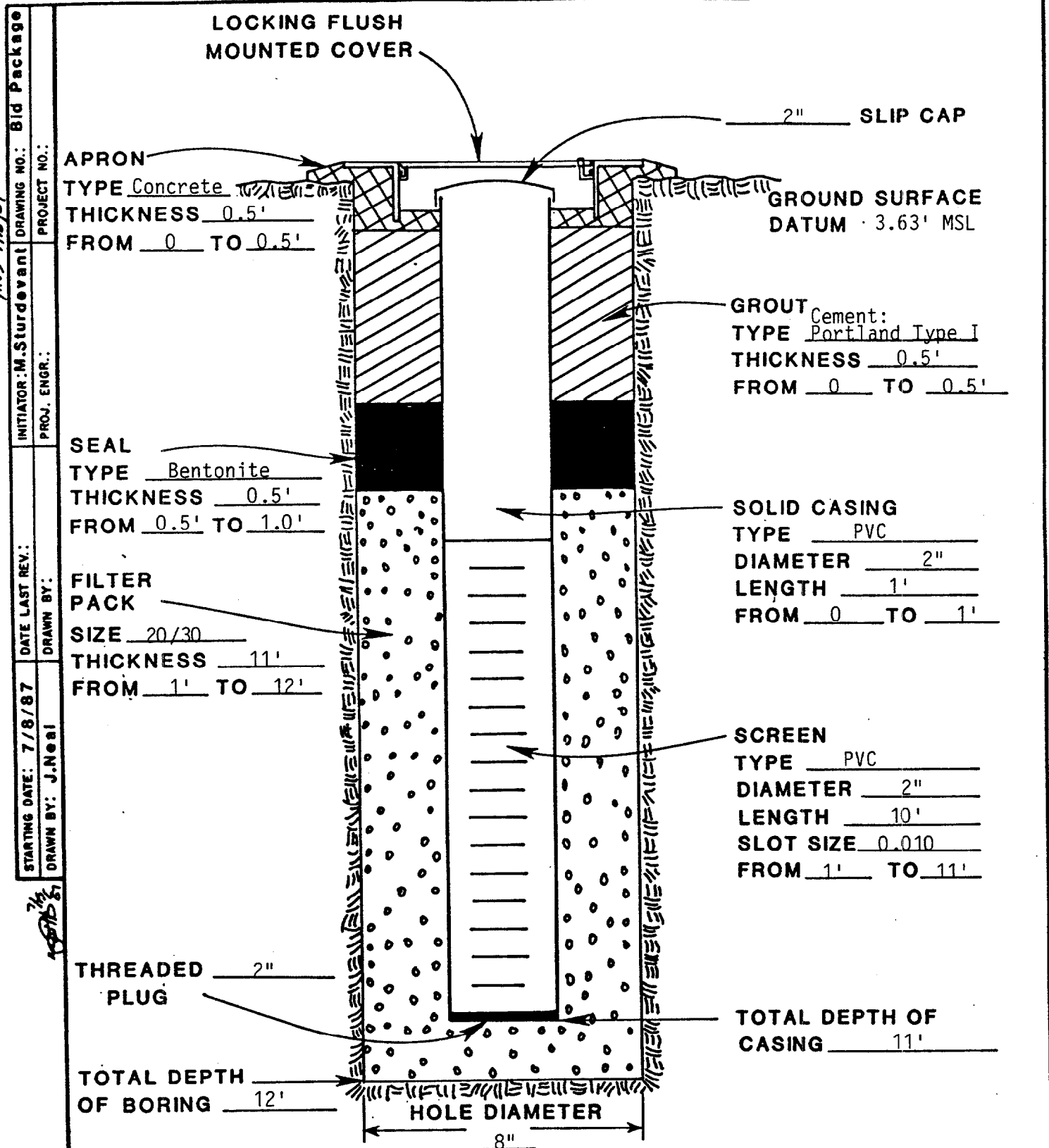
COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒
 REMARKS Well developed 6/6/90, produced clear silt/sand free water after pumping approxi-
mately 25 gallons Pump used was a 5 HP Briggs and Stratton Centrifugal pump with a flow
rate of 1 to 2 gpm.

Installed by: K. Dorsey

Date: 6/4/90

NW 10-3

Checked by: M. Hampton

Date: 9/21/90

Key West Remedial Investigation



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Keu West Kemaman Industrial Estate - 2016</u>	
BORING NUMBER: <u>B-1</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/2/90</u>
ELEVATION: <u>3.4</u>	GWL: Depth <u>2.3'</u>	Date/Time <u>6/2/90 - 09:15</u>	DATE STARTED: <u>6/2/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>	Depth <u>N/A</u>	Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/2/90</u>
DRILLING METHODS: <u>Churned Air Rotation, Soil Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
		14	✓					Time
		16		Oolitic Limestone,				09:15 10ppm
		20		Dry, Tan				3.2
0-2		14						
		17						
		17		Oolitic Limestone				3.0 ppm
		40		Tan				OVA
2-4		25		Wet 3/4"				
		15						
		21		Oolitic Limestone				1.0 ppm
		12		Tan, wet				0.1
		15						
		15		Oolitic Limestone				1.0 ppm
	8FF74-1	22		Tan, wet				09:25 OVA
	5-7-2Y	19						
6-8		30						
		4		Oolitic Limestone				1.0 ppm
		21						OVA
		25		Tan, wet				
8-10		24	✓					
				End of BORING				

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin A. Lee

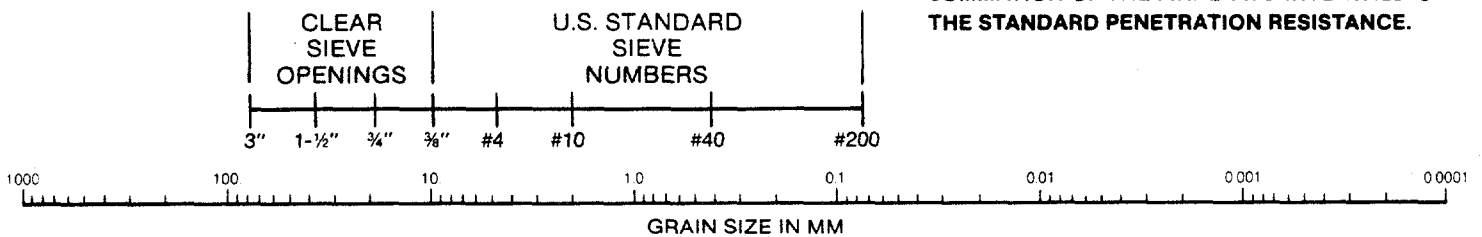
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Red Oak Farm</u>		DATE: <u>6/2/90</u>
BORING NUMBER: <u>B-2</u>		COORDINATES: <u>N/A</u>		DATE STARTED: <u>6.2.90</u>
ELEVATION: <u>2.1</u>		GWL: Depth <u>2.6</u>	Date/Time <u>6.2.90-12:03</u>	DATE COMPLETED: <u>6.2.90</u>
ENGINEER/GEOLOGIST: <u>R. Dorsey</u>		Depth <u>N/A</u>	Date/Time <u>6.2</u>	PAGE <u>1</u> OF <u>1</u>
DRILLING METHODS: <u>Rotary Percussion Test / Soil Boring</u>				

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2		11 22 15 15	N/A	Colite Limestone Dry, tan				Time 12:40 5.0ppm OVA
2-4		16 27 33 23		Colite Limestone Wet, tan				8.0ppm OVA
4-6	8FF74-2 52111	12 14 15 22		Colite Limestone Wet, tan				12:50 8.0ppm OVA
6-8		12 11 14		Colite Limestone Wet, tan				14.0ppm OVA
8-10		11 10 14	✓	Colite Limestone Wet, tan				14.0ppm OVA
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment For F-700 Mobile Drill
 Driller: John Alex

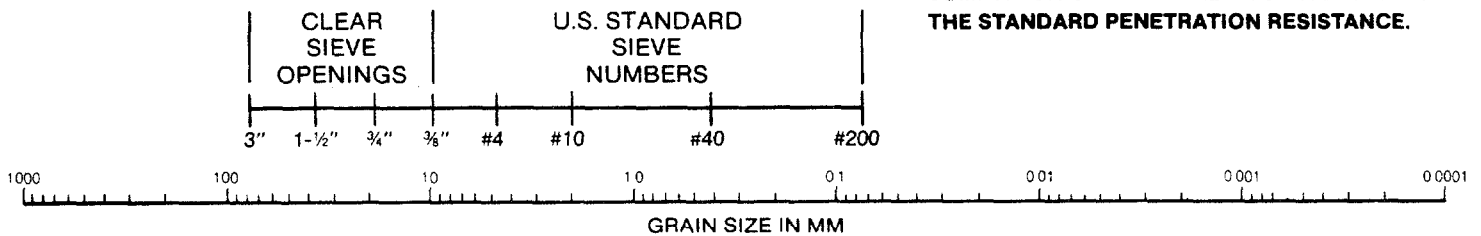
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595342	PROJECT NAME: Key West Peninsula, International	
BORING NUMBER: E-3	COORDINATES: N/A	DATE: 6/2/92
ELEVATION: 2.9'	GWL: Depth 3.5' Date/Time 6/2/92-10:40	DATE STARTED: 6/2/92
ENGINEER/GEOLOGIST: R. Dorsey	Depth N/A Date/Time N/A	DATE COMPLETED: 6/2/92
DRILLING METHODS: Standard Penetration Test, Soil Boring		PAGE 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 ft)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	BFE743	15	N/A	Colitic Limestone	4	4	4	Time 10:40
		21		Dry, tan				10:40
		20						10:40
		15						10:40
		26		Colitic Limestone				10:40
		15		Wet, tan				10:40
		35						10:40
		31						10:40
		25		Colitic Limestone				10:40
		21		Wet, tan				10:40
		17						10:40
		14						10:40
		14		Colitic Limestone				10:40
		18		Wet, tan				10:40
		27						10:40
		16		Colitic Limestone				10:40
		14		Wet, tan				10:40
		18						10:40
		18						10:40
				END OF BORING				

NOTES:

Drilling Contractor: Drilling Solution
Drilling Equipment: Ford F-700 Mobile Dr.
Driller: Kevin + Alex

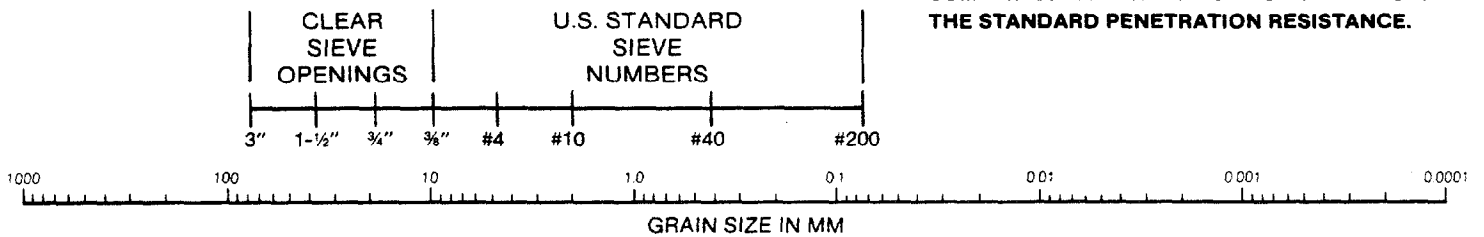
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 595342	PROJECT NAME: 100' Trench	
BORING NUMBER: 2-1	COORDINATES: 47	DATE: 5-2-78
ELEVATION: 3.3'	GWL: Depth 3' Date/Time 11:30	DATE STARTED: 5-2-78
ENGINEER/GEOLOGIST: A. D. ...	Depth 3' Date/Time 11:30	DATE COMPLETED: 5-2-78
DRILLING METHODS: ...	PAGE 1 OF 1	

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	7-2	17	7-	2-410 Limestone	ML	1		11:30 142
0-2		18				1		143
		19				1		144
		20				1		145
		21				1		146
		22				1		147
		23				1		148
		24				1		149
		25				1		150
		26				1		151
		27				1		152
		28				1		153
		29				1		154
		30				1		155
		31				1		156
		32				1		157
		33				1		158
		34				1		159
		35				1		160
		36				1		161
		37				1		162
		38				1		163
		39				1		164
		40				1		165
		41				1		166
		42				1		167
		43				1		168
		44				1		169
		45				1		170
		46				1		171
		47				1		172
		48				1		173
		49				1		174
		50				1		175
		51				1		176
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		261				1		386
		262				1		387
		263			</			

NOTES:

Drilling Contractor W. J. B. & S. Co.

Drilling Equipment _____

Driller: Robert J. Smith

1.0 ppm: Blue-greenish color appearing
1.5 ppm: color appearing more brown

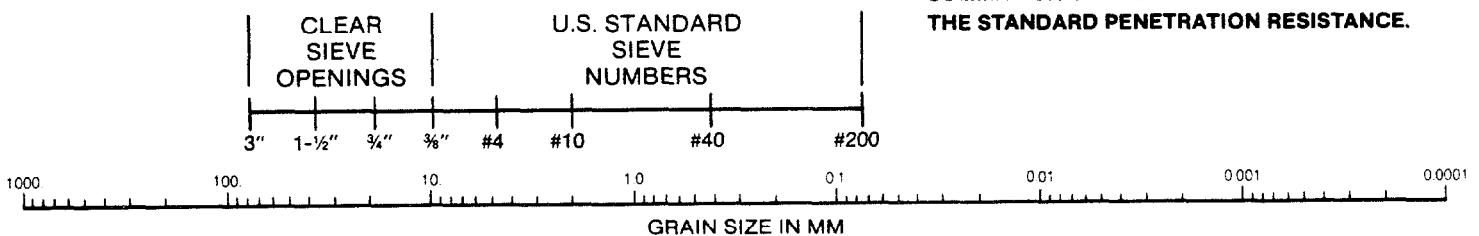
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
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GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
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	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>105-22</u>	PROJECT NAME: <u>Red Bank</u>		
BORING NUMBER: <u>B-7</u>	COORDINATES: <u>N/A</u>		DATE: <u>4/17/92</u>
ELEVATION: <u>3.0'</u>	GWL: Depth	Date/Time <u>4/14/92-10:41</u>	DATE STARTED: <u>4/17/92</u>
ENGINEER/GEOLOGIST: <u>J. J. [unclear]</u>	Depth <u>N/A</u>	Date/Time	DATE COMPLETED: <u>4/17/92</u>
DRILLING METHODS: <u>Standard Penetration Test, [unclear]</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
	N/A							Optical Microscopy
0-2				Oolitic Limestone Dry, tan	4-5	4-5		Time 10:41 2.0ppm 0.4
2-4				Oolitic Limestone Detrital, tan				10.0ppm 0.4
4-6				Oolitic Limestone				52ppm
6-8				Oolitic Limestone Detrital				15ppm 0.4
8-10	✓ BREM-7 EP TOX			Oolitic Limestone Detrital				14ppm
10-12			✓	END OF BORING	✓	✓	✓	11:00

NOTES:

Drilling Contractor Drilling Erection
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin & Alex

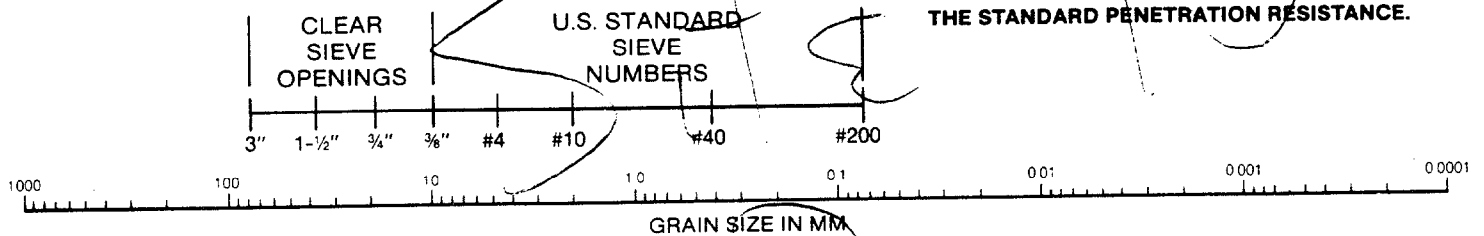
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
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COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

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	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>	PROJECT NAME: <u>100 West Kansas City, Missouri</u>		
BORING NUMBER: <u>3-2</u>	COORDINATES: <u>N/A</u>	DATE: <u>5/2/90</u>	
ELEVATION: <u>310'</u>	GWL: Depth <u>N/A</u> Date/Time <u>5/2/90-15:30</u>	DATE STARTED: <u>5/2/90</u>	
ENGINEER/GEOLOGIST: <u>K. Dorn</u>	Depth <u>N/A</u> Date/Time <u>5/2</u>	DATE COMPLETED: <u>5/2/90</u>	
DRILLING METHODS: <u>Standard Penetration Test / Soil Boring</u>		PAGE: <u>1</u>	OF: <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
20		20	74	Oolitic Limestone				100%
22		22		Dry, tan				20%
18		18						
18		18						
16	BFTM-1	16		Oolitic Limestone				100%
18	EP	18		Wet, tan				15:30 20%
21		21						
28		28						
14		14		Oolitic Limestone				50% 20%
12		12		Wet, tan				
5		5						
15		15						
17		17		Oolitic Limestone				100%
14		14		Wet, tan				20%
13		13						
13		13						
12		12		Oolitic Limestone				15:50 20%
10		10		Wet, tan				
13		13						
14		14						
				END OF BORING				

NOTES:

Drilling Contractor Drilling Solutions
 Drilling Equipment Ford F-700 Mobile Dr.
 Driller: Kevin & Alex

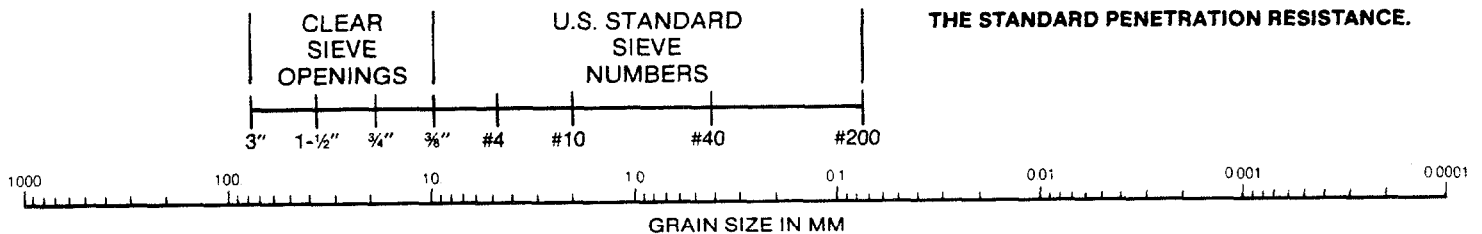
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

⁽¹⁾ STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
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HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>595392</u>		PROJECT NAME: <u>Revised Ken. dist. Investigation</u>	
BORING NUMBER: <u>B-5</u>		COORDINATES: <u>N/A</u>	DATE: <u>6/23/90</u>
ELEVATION: <u>2.11'</u>		GWL: Depth <u>2'4"</u> Date/Time <u>6/2/90-13:45</u>	DATE STARTED: <u>6/2/90</u>
ENGINEER/GEOLOGIST: <u>K. Dorsey</u>		Depth <u>N/A</u> Date/Time <u>N/A</u>	DATE COMPLETED: <u>6/2/90</u>
DRILLING METHODS: <u>Standard Penetration Test / So. Boring</u>			PAGE <u>1</u> OF <u>1</u>

DEPTH (ft.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
0-2	BFFTA-5 15	15	N/A	Coarse Limestone Dry	N/A	N/A		Time 13:40
2-4	N/A	16 17 19 15 15 35 36 38 20		Coarse Limestone Wet, can be split				34 ppm OVR
4-6		20 20 22 20 20 20 20 20		Coarse Limestone Wet				50 ppm OVR
6-8		11 17 18		Coarse Limestone Wet				70 ppm OVR
8-10	N/A		✓	END OF BORING				14:05 40 ppm OVR

NOTES:

Drilling Contractor Drilling Solution
 Drilling Equipment Ford F-700 Mobile Drill
 Driller: Kevin & Alex

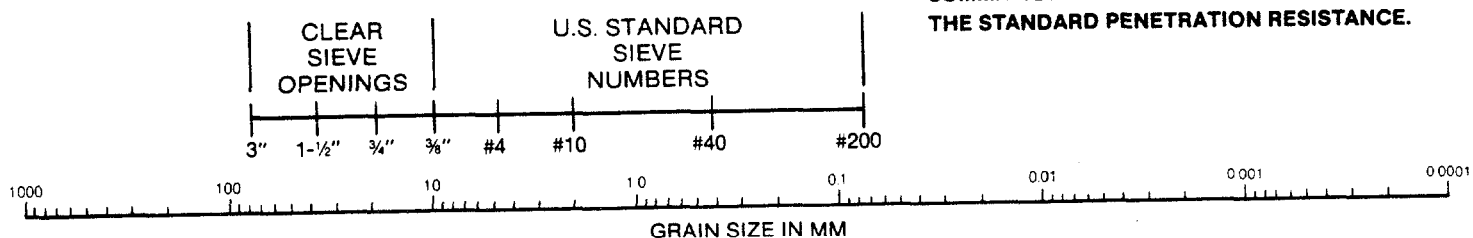
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	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
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